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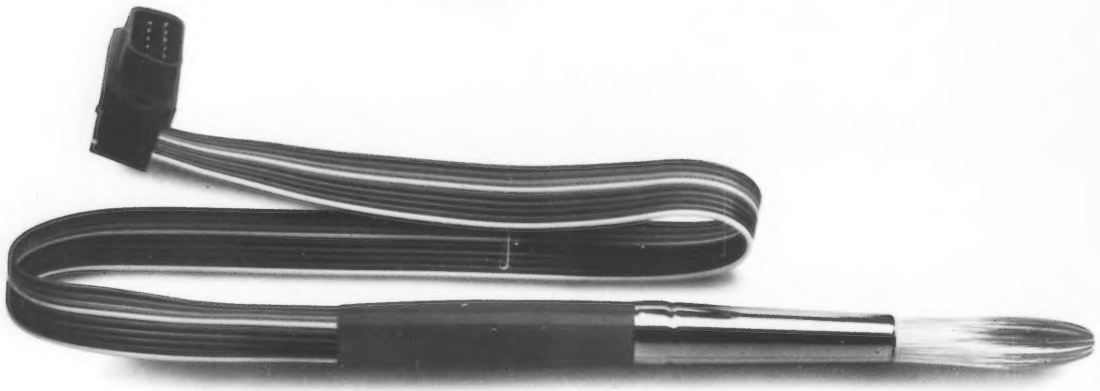

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CIRCLE 146 ON READER SERVICE CARD

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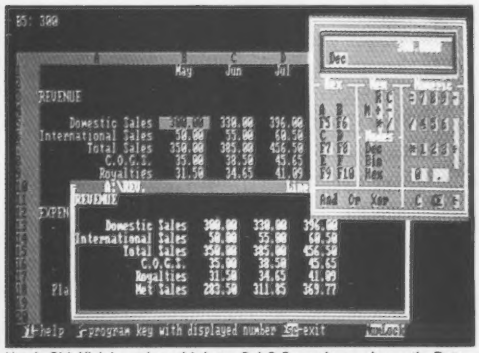
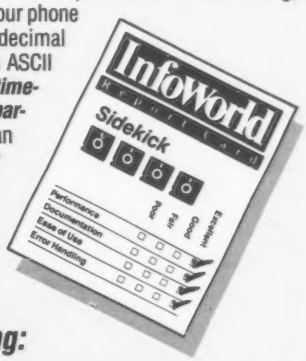


Here's SideKick in action with Lotus® 1-2-3 running underneath. Data has been imported from Lotus to SideKick's **notepad**, shown in the lower portion of the screen. The notepad is a full-screen editor that lets you import and export data; it utilizes WordStar commands to let you time- and date-stamp notes and save them to disk. The SideKick **calculator**, shown at the upper right, offers memory capability, nested parentheses, and the ability to convert decimal to hexadecimal or binary. It even lets you transfer resulting figures to your underlying application.

The Critics' Choice *What more can we say?*

"SideKick™ stands in the shadows behind whatever program you are using, ready to jump forward when you need it. The program's various functions use windows that overlay the display you are working with and restore the screen when you are through. The program contains a respectable word processor for note taking, a dialer that your smart modem can use with your phone list, a calculator for hexadecimal/binary/decimal arithmetic, an appointment calendar and an ASCII table for programmers . . . ***SideKick is a time-saving, work-saving, frustration-saving bargain.*** Having a programmer's calculator, an appointment calendar, and a notepad at your beck and call, no matter what program is running, is the first big step to making the paper and pencil obsolete."

—Dan Robinson of InfoWorld



And he's not the only one talking:

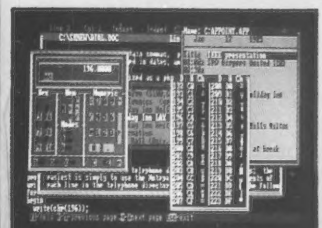
Charles Petzold, PC Magazine: *"In a simple, beautiful implementation of WordStar™'s block copy commands, SideKick can transport all or any part of the display screen (even an area overlaid by the notepad display) to the notepad."*

Jerry Pournelle, BYTE: *"If you use a PC, get SideKick. You'll soon become dependent on it."*

Garry Ray, PC Week: *"SideKick deserves a place in every PC."*

The **telephone autodialer/directory** places calls for you via your Hayes™-compatible modem and locates numbers from one of the program's several directories. Here the dialer is running on top of WordStar.

The **calendar** can record appointments, records and notes—yours or those of the entire department—up to the year 2099. Here the dialer is running on top of Lotus.



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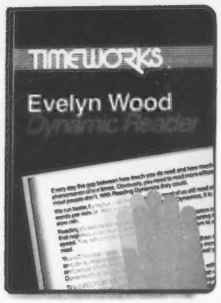

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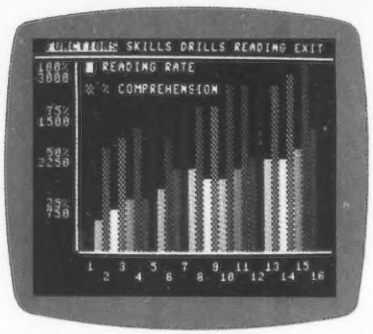

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Cover: Photograph by Jeff MacWright. Inset courtesy of Atari.

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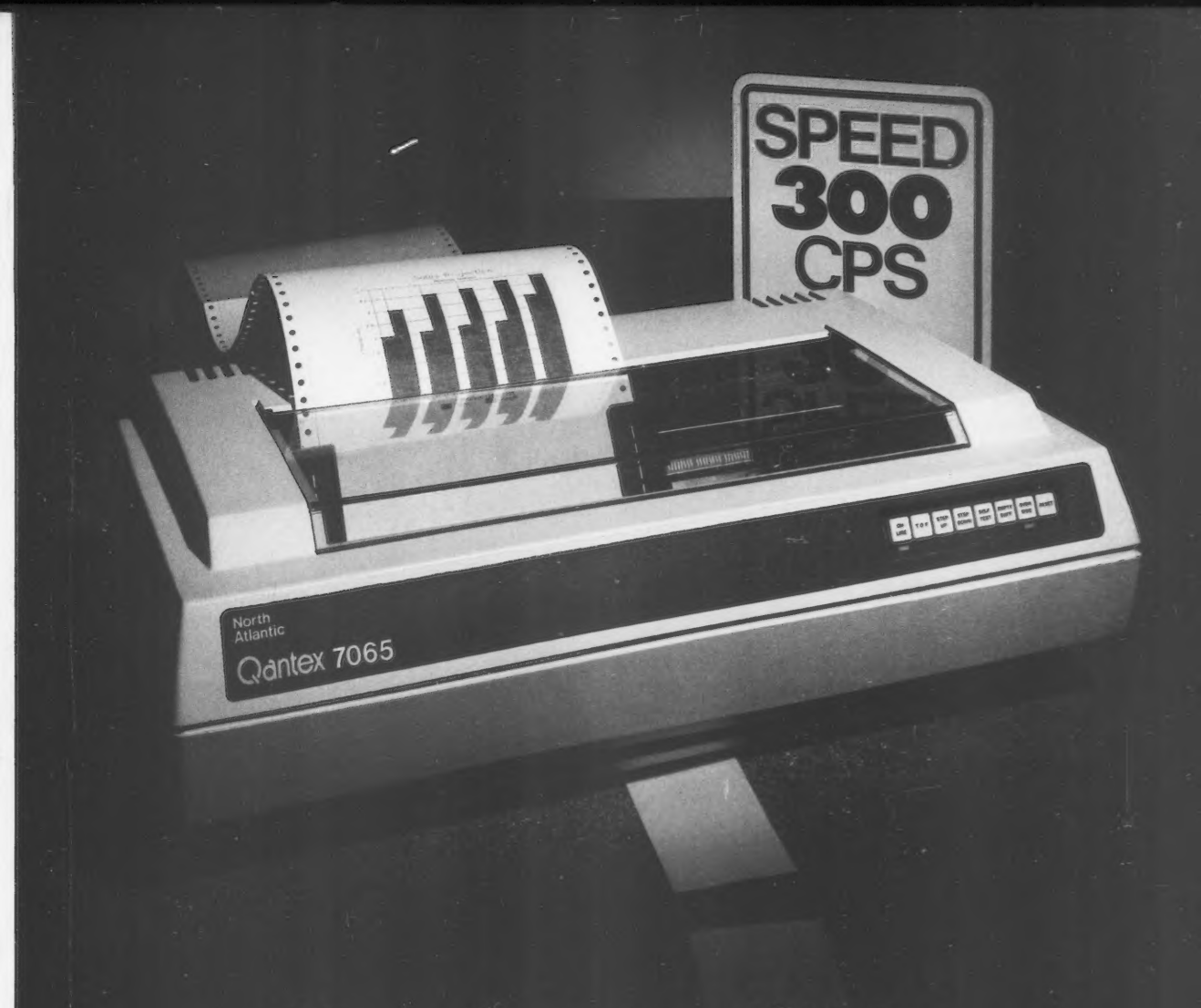

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CIRCLE 135 ON READER SERVICE CARD

INPUT/ OUTPUT

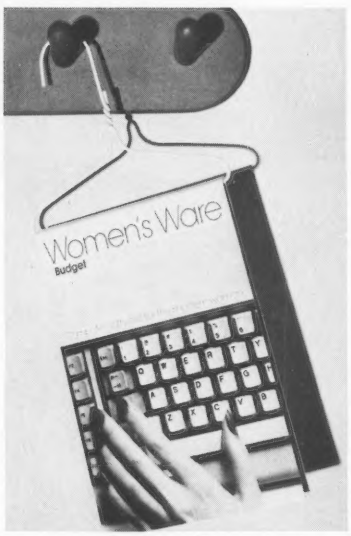
Women's Ware Addresses The Gender Gap

Readers who read our review of Women's Ware in the September 1984 issue of Creative Computing will remember that our treatment of the software line was somewhat unusual. Because we departed from our customary format in the review, we have made yet another departure from our normal practice in allowing Neon Software an unusually large amount of space in which to respond to the review.

We welcome the opportunity to correct the many wrong impressions created by the article about "Women's Ware" products in the September issue of your magazine. The position taken by your editor, Elizabeth Staples, was unfair, unprofessional, and a gross misrepresentation of The Neon Software Company, its products and employees.

First, the philosophy of the company and its management was wrongly represented as anti-feminist, causing much embarrassment and harm. Second, the article was misrepresented as an "in-depth" review, which it was not. Its physical presentation as a letter was so different from your usual review format that a number of people mistakenly believed it to be an advertisement, to our great detriment. Third, numerous facts relating to the quality and performance of the software were omitted, resulting in a severely distorted picture of its power and capability.

The Neon Software Company has gone to great lengths to produce useful, ready-to-use software products for home and personal use. Our research revealed that women were interested in using computers in the home only if they were a labor-saving device; they were far too busy to pursue computers as a hobby. We spent over two years developing the maximum database utility consistent with push-button ease of use for the applications women wanted. We focused our marketing on women because they were the likeliest users of our products; hence the name "Women's Ware." We even took the extra step of reviewing our packaging and promotional concepts with Gloria Steinem to insure that our approach was not sexist, and—even at some expense and difficulty—altered our package to insure that our approach was not sexist.



Anyone who does not recognize the growing gender gap in computer literacy is ignoring the facts. A *Better Homes & Gardens* Consumer Panel survey showed that 75% of the women who had computers in their home were using or would like to use them; but *USA Today* recently conducted a poll which revealed that three times more men are using computers in the home than women. We believe that women are just as capable as men when it comes to computer use, and there are no differences in their requirements for impersonal things like business software. However, their interests and personal use for computers are different. The reason the gender gap exists is that the computer industry has not recognized that fundamental difference. By providing software of real value which is easy to use we are addressing this problem.

The "Women's Ware" product line was built on the idea of a preformatted database. Because of this, all products in the line have real utility. For example, it would be silly to keep a checkbook on a computer just to provide an accurate balance. However, with "Women's Ware" *Checkbook* you can select information about your spending at tax or budget time; the computer is doing a task which has real value and does it more efficiently than you can manually. Each of the "Women's Ware" products has this kind of power and utility, an important item of information omitted from the review. In addition, *Freefile* is a database product which permits you to define your own uses, such as medical records or hobby collections.

People shouldn't have to become programmers in order to use computers. Elitists who insist that everyone should build their personal applications from a professional database product are ignoring the real needs and interests of the majority of our population. Representing the world of computers as complex and mysterious may feed the egos of initiates, but it drives away many of those who might otherwise learn to use and enjoy computers to enrich their careers and lives. We hope that the "Women's Ware" line will provide a practical bridge to the world of computers for many new users.

Dwight Norwood, President
Marie Norwood, Vice President,
Customer Relations
The Neon Software Company, Inc.
55 High St.
Middletown, CT 06457

Without belaboring the point further, we wish to make it clear that our intention in the satirical review of Women's Ware was to express our distaste for the idea that women need special software. As Lindsy Van Gelder has said, "There's a thin line between affirmative action and patronization." To the extent that the review may have been misconstrued as a personal attack on Marie Norwood, we apologize.—EBS

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CIRCLE 117 ON READER SERVICE CARD

More On Expert Choice

Dear Editor:

I was delighted to see the review of *Expert Choice* in *Creative Computing* (January 1985, "Business Forecasting Software in Brief"). There are few omissions and one factual error that your audience should be made aware of.

Since *Expert Choice* is a generalized tool, it can be used by business as well as government and industry. One application is forecasting; others include strategic planning, employee evaluation, site selection, and arbitration.

The program should be used for complex decisions that involve many criteria and alternatives. It is ideal for group decision making where the inequalities of the members come into play.

Finally, the article stated that *"Expert Choice* calculates the priorities and displays results along with an inconsistency index which shows how consistent your judgments between pairs" of criteria and alternatives. The article did not say that the judgments are then synthesized or combined to reach an overall result. The article stated that "if you receive less than 1.00 the result is considered satisfactory." The result should be 0.10. Furthermore, the reason for an inconsistency index is to inform the decision-maker that he may have incorrectly entered a judgment. Real world situations can be inconsistent and still be satisfactory.

Mary Ann Selly
President
Decision Support Software, Inc.
1300 Vincent Pl.
McLean, Va 22101

More On Logo

Dear Editor:

As a representative of the second largest supplier of Logo, I would like to offer comments on the article "A Comparison of Logos: Today's Turtle is No Slowpoke" by Richard Roth which appeared in your December 1984 issue.

The first point is a major omission. The only mention of Commodore Logo was under "other." This product was introduced in mid 1983 for the Commodore 64. Since that time, it has become the most widely used Logo in general use in the home with over 100,000 copies sold. Commodore Logo was developed by Terrapin as was the recently introduced Logo for the Commodore Plus 4.

I would also like to offer clarification on several points made by the author:

He says, "Therefore, sprites are found only in Logos for the Apple with the add-on sprite board and the Coleco Adam and the TI 99/4A." Commodore Logo offers both sprite and music capability as standard features with the $200 Commodore 64. Atari also offers sprites as a standard feature. Sprites as an add-on feature for the Apple are not marketed by Terrapin (contradictory to what is stated in the article). We have made the decision that Sprite Logo (for the Apple II family) is prohibitively expensive at $300 per microcomputer.

On the Terrapin robot turtle: Terrapin has not offered a robot turtle for over two years, and it was never sold for $300. The article suggests that the Terrapin robot turtle "price tends to keep the turtle out of the hands of most children" yet later suggests, under PC Logo, the robot is "a peripheral that schools should consider buying." That robot turtle is $300.

No mention was made of networking. This has become a critical issue with many school systems because of the savings that can be realized by using a single copy of a software package (albeit at a higher price) with an unlimited number of micros. Networked Logo is available from Terrapin for the Corvus Omninet. It is also available for Pro-Net.

Robert A. Paolucci
Director of Marketing
Terrapin, Inc.
222 Third St.
Cambridge, MA 02142

Artificial Logic?

Dear Editor:

I would like to comment on "The Intelligent Gamer," by David Levy, and "Thinking about Thinking Machines," by Tom Stonier in your November 1984 issue.

There has long been a quaint—and erroneous—belief that studying mathematics enabled one to think more logically. A similar belief has also existed concerning chess, and more lately, computing. Mr. Levy's article should be of some help in exploding the latter two myths, since he manages in his article to make no fewer than three elementary logical errors in two sentences.

Mr. Levy's argument in defense of the putative intelligence of chess programs can be summarized as follows: 1) Human chess masters are intelligent; 2) a

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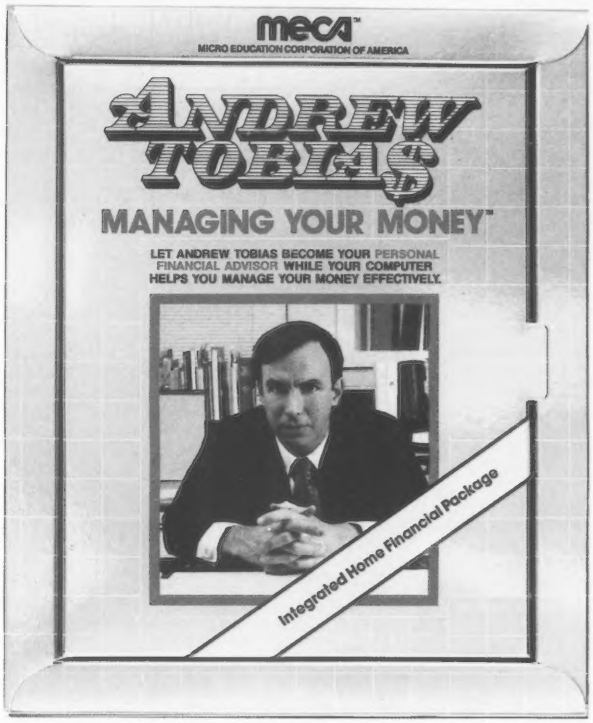
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program that can perform "an activity requiring intelligence" is itself intelligent.

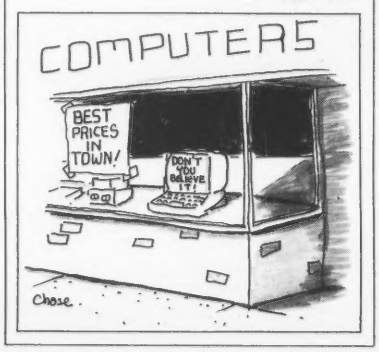
I have no quarrel with the first premise taken by itself. The second statement, however, is neither an argument nor a conclusion: it is a tautology (logical error number one). An "activity requiring intelligence" must be performed by an intelligence, by definition. But Mr. Levy has not demonstrated that playing chess *requires* intelligence.

Simply, Mr. Levy has tricked himself by using the term "human chess masters" ambiguously in the context of his argument (logical error number two). Certainly human chess masters are intelligent, but they may be so by virtue of their ability to play chess, or by virtue of being human. If we restate 1) unambiguously, and replace the tautology in 2) with a meaningful statement, what is left of the argument can be expressed by the following syllogism: 1) all beings which play chess *and* are human are intelligent; 2) computers play chess; *therefore* computers are intelligent.

As we normally attribute intelligence to humans whether they play chess or not, the first premise establishes no relationship between intelligence and chess playing whatever, and the conclusion does not follow. Not to put too fine a point on it, this argument suffers from what is technically known as *Quaternio Terminorum*, or the "Fallacy of Four Terms" (logical error number three). The first rule governing the categorical syllogism—which is what Mr. Levy was striving to construct here—is that it must contain exactly three terms, used unambiguously throughout the argument.

In all fairness, Mr. Levy is no worse a logician than many others of the confraternity of AI enthusiasts. For example, Mr. Stonier's article makes much the same leaps of logic as Mr. Levy's in assuming that if machines (including electronic ones) are better at carrying out by their own means certain specialized tasks which human beings can *also* carry out by means of thinking, then machines must *be* thinking beings—and superior ones at that. If we are to believe that comparable results necessarily imply identical processes, what conclusion should we draw from the observation that humans and fire hoses both pass water, and that the latter "out perform" the former in this task?

Normand E. Duern
404 Elgin St., #7
Ottawa, ON
K2P 1N3



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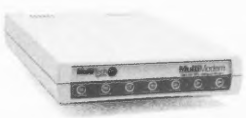

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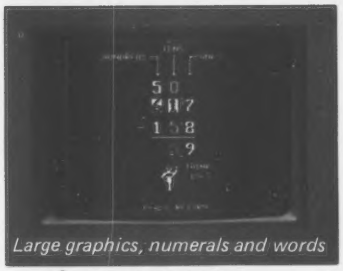

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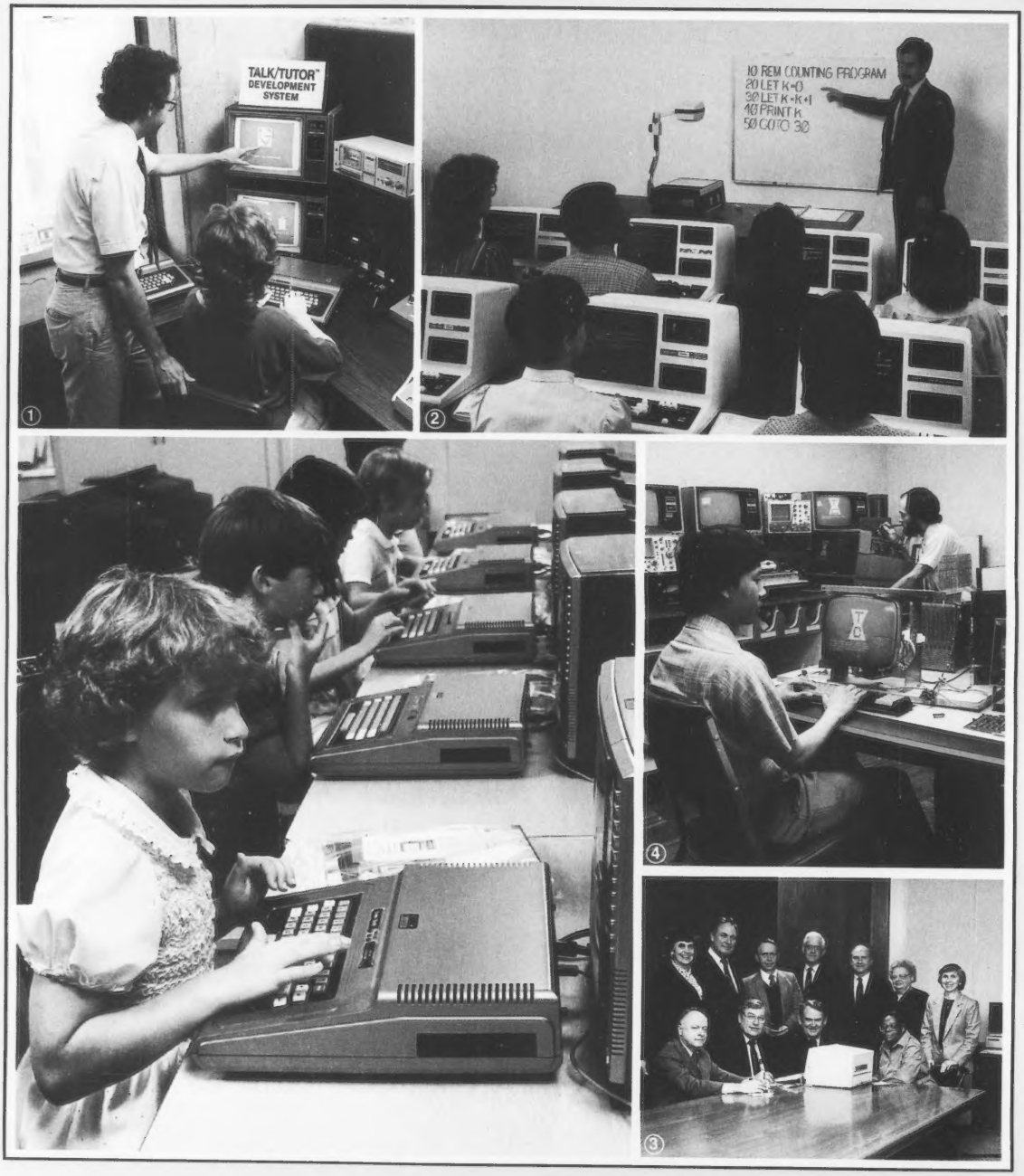

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We publish the most carefully selected and tested educational software available. But we understand that educators want first-hand experience with courseware before they decide to bring an educational program into their classrooms. That's why we created the Courseware Preview Library, a collection of our educational software and user manuals. You'll find more than 100 educational products in the library, ranging from elementary school software to a four-volume administrative program. Examine and try the programs you want at any of our Computer Centers.

National Conferences

In 1984, we joined with the University of Texas at Austin, College of Education, Continuing Education Program to sponsor a conference on computer use in education. The conference was a success, providing a forum to discuss applications, benefits and developments in educational computer use. A second conference in the spring of 1985 provided another opportunity for educators to keep abreast of educational computer technology.

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INDUSTRY INSIDER

David H. Ahl

A Better Mac, PC ROMs

On the drawing board: an open architecture "Hacker's Mac." Lee Felsenstein, designer of the Sol-20 and Osborne 01, feels that the Mac just doesn't live up to the open architecture tradition of the Apple II and that a more open machine will move the locus of Mac hardware and software development outside of Apple. At a recent Homebrew Club meeting, Lee proposed a machine, sufficiently close to the Mac that software could be ported over to it, but with a design that would be in the public domain. And—hang onto your hat—he'd like to make it available as a kit!

Lee's bread and butter activities at Golemics include a ROM chip set that emulates the functions of the IBM PC. It's all perfectly legal and makes a clone manufacturer's job much easier. Coming soon: a ROM chip set that emulates the IBM PC AT. For information, Golemics, Inc., 2600 Tenth St., Berkeley, CA 94710.

Windowing Standards?

In an effort to prevent IBM's Top View from becoming the *de facto* windowing standard, several companies have met to begin the process of creating an ANSI (American National Standards Institute) standard for personal computer windowing environments. The companies involved so far are Microsoft, Digital Research, Intel, Motorola, Apollo, Masscomp, Olivetti, Sun Micro Systems, and Nova Graphics.

John Butler of Microsoft feels it is important to get software developers together to learn from each other as well as to standardize the way that applications software will tie into a windowing system. Don McCord of Intel added that it is "a losing proposition if software for one windowing system is not nearly compatible with another."

Nevertheless, some observers feel that IBM already has the upper hand because Top View will have so much market momentum by the time the committee proposes a standard. The lengthy standards process seems to support this view: the new committee won't even meet officially until May and probably won't finish its work for at least three years.

IBM has already endorsed the proposed ANSI standard for the Virtual Display Interface (VDI) which specifies interfacing between monitors and other graphics devices. As a result, Microsoft is reported to be switching from its Graphics Device Interface (GDI) approach to VDI. This almost certainly assures the success of VDI and suggests that perhaps the best strategy is to get IBM involved in the new windowing standard right at the outset.

Regional Telcos Jump Into Computers

Nynex Corp., the amalgam of the New York and New England Telephone Companies, opened its first two retail computer stores in mid-December. The chain, operating under the Datago name, started with units in Albany, NY and Springfield, MA. The Datago debut had been blocked by the Justice Department since March.

Nynex plans to target small businesses, including lawyers, real estate agencies, and sales agencies. TV and print ads will carry the themes, "The safety net for small business" and "The store for people afraid to buy a computer and afraid not to." Brands that will be carried include IBM (!), Compaq, Wang, and Data General.

The approval by Justice of the new Nynex operation is expected to clear the way for other regional telcos to start their own retail computer operations. For example, Pacific Telesis plans to open a national chain of outlets this year while Bell Atlantic plans to acquire Sorbus Service, one of the nation's largest computer maintenance companies. Bell South and Ameritech are also said to be investigating the area of office automation but have no immediate retail plans.

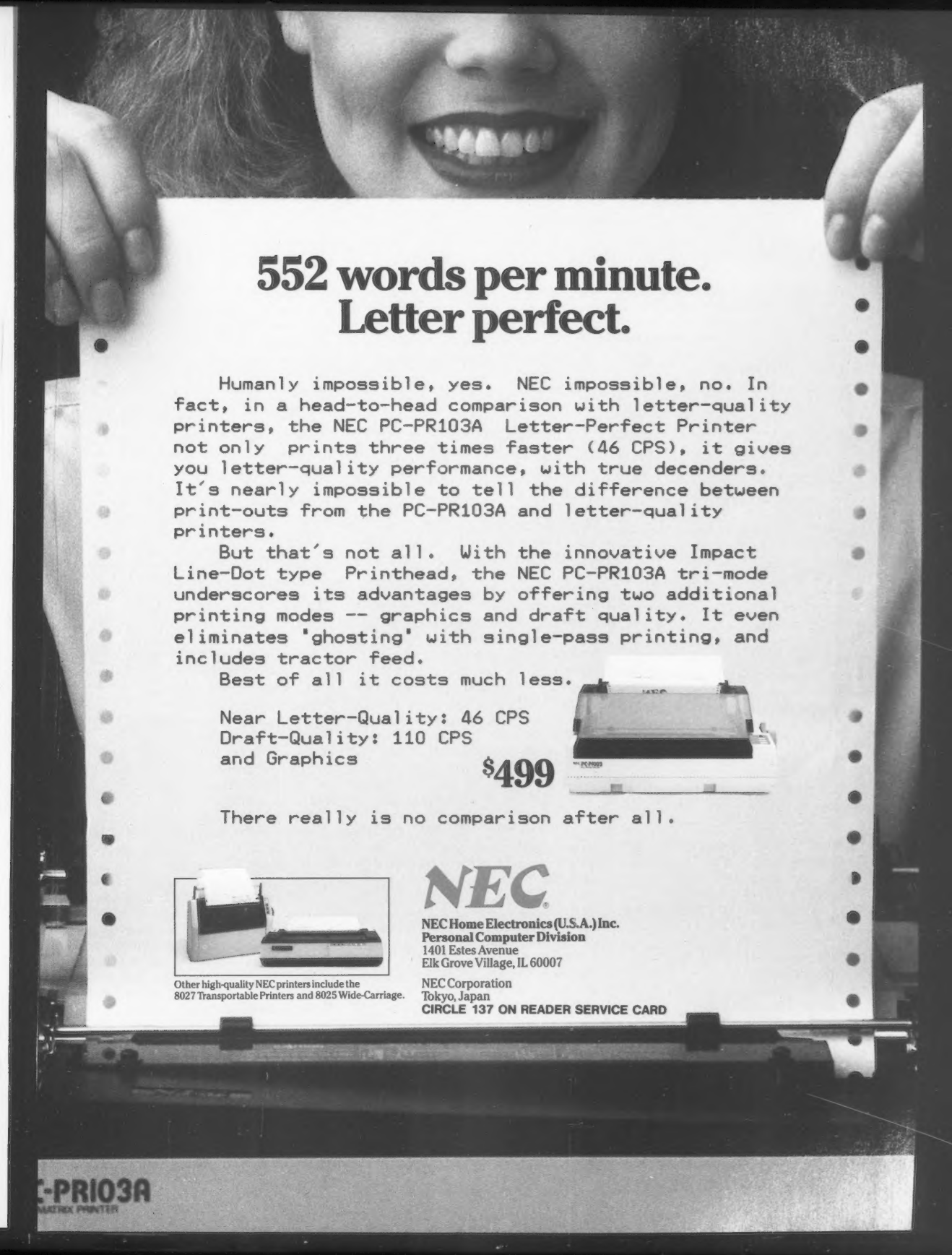
Random Bits

Commodore is seeking a second ad agency to handle a major expansion into a new microcomputer product line later this year . . . After a $95 million loss in the fourth quarter, **Bally (Pac-Man) Manufacturing** is dropping out of the coin-op and videogames businesses . . . **Apple's** "Test drive a Mac" promotion is resulting in about 50% conversions to sales. Dealers expected more, but some candidly admit that all they asked for was a valid credit card for the loan instead of properly qualifying prospects in advance . . . The IBM AT, in short supply following its introduction, is still on allocation. **IBM** cites component shortages as the reason but some observers speculate that IBM is trying to improve the reliability of the hard disk before shipping too many systems.

Televideo, experiencing competitive problems with its PC line, has closed several plants and cut back on its sales and marketing staff . . . After failing to line up distribution for its personal computers, **NCR** announced it is closing its U.S. plant and transferring production back to Germany . . . **Acorn,** maker of the BBC microcomputer, cut its U.S. workforce by 60% and reduced prices by up to 14% in an effort to bolster its sagging U.S. sales . . . **Hitachi** and several other Japanese suppliers recently reduced the prices of 256K memories by 50 to 60%.

In high demand in Silicon Valley: high-tech auctioneers to squeeze the last pennies out of failed companies. One of the most successful, **Ross Dove,** recently sold off every last chip at Gavilan in a three-day sale that netted $1.6 million . . . Out of Chapter 11: **Victor Technologies** with a workforce trimmed to 250 today from a high of 3000 in 1983. The firm will market the 25 lb. Vicki portable, Victor 9000, and MS-DOS board for the 9000, mainly targeting vertical markets . . . Also shifting its focus to vertical markets is **Texas Instruments,** a move the firm hopes will revive sales of its slow-moving Pro . . . Formula for success? An innovative product, frugal management, and a 60% profit margin. Just ask David Allen, founder of **Tallgrass Technologies** in 1981. The company expects to do $60 million in business this year, but with competitors sprouting like dandelions, the margin just might shrink a bit.

continued on page 77



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BOOK REVIEWS

Reference, TRS-80 Model 100, and history

Russ Lockwood

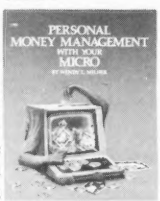
Professional Tax Planning Using Multiplan by Mitchell H. Jacobs and Robert G. Rice. Management Information Source, 3543 NE Broadway, Portland, OR 97232. Softcover, 215 pages, $29.95 without disk, $44.95 with disk

This no-nonsense book uses Microsoft *Multiplan* to set up seven specific templates for tax planning. It provides step-by-step instructions for construction of specialized worksheets, including formulas and a detailed explanation why these formulas are placed in specific cells.

The seven templates compute the joint taxes of married individuals (Form 1040), tax for a single individual (Form 1040), capital gains tax (Schedule D), tax liability of a fiduciary of an estate, simple trust, or complex trust (Form 1041), corporate income tax (Form 1120), tax payable on a lump sum distribution from a retirement plan (Form 4972), and the change in tax from an investment or the exercise of stock options.

Jacobs, a lawyer, and Rice, a certified public accountant, provide a practical approach for tax planning using *Multiplan*.

Personal Money Management with Your Micro by Wendy L. Milner. Tab Books, Blue Ridge Summit, PA 17214. Softcover, 232 pages, $13.50

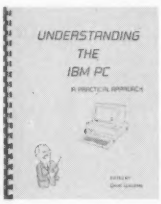


Wendy L. Milner makes two assumptions: you are interested in keeping track of home finances on your Apple II computer and you are not afraid to learn a little about Basic programming.

The topics include general budgeting, taxes, car records, checkbook balancing, loan amortization, and interest rate computation—in short, just about all the applications you need to manage your personal finances. Each topic divides into three parts: financial concept, program development, and a complete program listing in Applesoft Basic.

If you bought an Apple II to keep track of home finances, *Personal Money Management with Your Micro* is the book for you.

Understanding the IBM PC: A Practical Approach edited by David Williams. Mini Press, 167 Rafkin Rd., Bloomingdale, NJ 07403. Softcover, 192 pages, $14.30

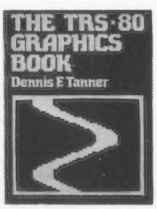


Written as a training manual for corporate executives, this introductory book examines all aspects of the IBM PC, focusing on information to help the reader get the computer from box to application quickly.

The first three chapters provide a background on hardware, software, and maintenance. Subsequent chapters explain the disk operating system, including the most often-used commands, and provide a quick reference guide to Basic. The book ends with a quick tutorial on running popular programs such as *WordStar, Lotus 1-2-3*, and *dBase II*.

Understanding the IBM PC is a good choice for neophyte IBM PC owners who want to become computer literate in a hurry.

The TRS-80 Graphics Book by Dennis F. Tanner. Van Nostrand Reinhold, 135 W. 50th St., New York, NY 10020. Softcover, 235 pages, $16.45, Hardcover, $24.45



This excellent tutorial on TRS-80 Model I, III, and 4 graphics provides a veritable goldmine of Basic and assembly language programming techniques.

Dennis F. Tanner, Director of Educational Product Development for Tandy, starts by creating graphics with SET/RESET/POINT programming, moves into using PRINT as a graphics instruction, and then examines POKE graphics and video memory. He covers compressed graphics using variable pointer instructions, program debugging under TRSDOS, and screen dumps to a printer. Additional chapters introduce assembly language graphics programming and discuss assembly language file handling.

The book includes dozens of short programs and numerous utilities to help programmers understand graphics concepts and programming logic.

By today's standards, TRS-80 Model I, III, and 4 graphics are somewhat crude, but this book can help TRS-80 owners wring the best possible graphics from their computers.

Sorcerers & Soldiers by Brian Murphy. Creative Computing Press, 39 E. Hanover Ave., Morris Plains, NJ 07950. Softcover, 226 pages, $9.95

Sorcerers & Soldiers is a cornucopia of wisdom for the beginning computer gamer. It explores game concepts and provides strategic and tactical tips for a variety of "mind games"—adventure games, fantasy/role playing games, and war games.

Murphy explains the principles underlying selected games such as *Germany 1985, North Atlantic '86, Fighter Command, Wizardry*, and *Ultima*, and then suggests strategies, tactics, and mental habits to help players. He examines terrain, generalship, ship-to-ship fighting, aerial dogfights, party makeup, and general adventuring.

The games described in *Sorcerers & Soldiers* take a long time to complete, especially using the trial and error method. Murphy's tips, which are more helpful than that other Murphy's law, can assist beginners in winning computer games and teach you why certain strategies succeed and why others do not.

It doesn't matter which Apple Computer you use...

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BOOK BRIEFS

Reference

How to Get Free Software by Alfred Glossbrenner. St. Martin's Press, 175 Fifth Ave., New York, NY 10010. Softcover, 436 pages, $14.95

This book provides tips, techniques, and practical advice on obtaining free software for most brands of computers. Another excellent book by Glossbrenner.

The Free Software Handbook (CP/M Edition) by T. Gregory Platt, Patricia L. Hatcher, and Blake H. Van Meter. PeopleTalk Asso., P.O. Box 863652, Plano, TX 75086. Softcover, 342 pages, $17.95

A comprehensive guide to public domain software for CP/M users.

The Free Software Catalog and Directory by Robert A. Froehlich. Crown Publishers, One Park Ave., New York, NY 10016. Softcover, 475 pages, $9.95

This guide provides advice on selecting, locating, and using free software.

IBM Software Directory. R. R. Bowker Co., 205 E. 42nd St., New York, NY 10017. Softcover, 934 pages, $24.95

This is an alphabetical and topical listing of software for the IBM PC and compatibles. Each entry holds a brief description and the price of the program. An *Apple Software Directory* is also available.

Business Software. Elsevier Science Publishing, 52 Vanderbilt Ave., New York, NY 10017. Softcover, 696 pages, $35

This catalogue offers detailed descriptions of business programs, indexed according to computer, operating system, programming language, and microprocessor.

History

Zap! The Rise and Fall of Atari by Scott Cohen. McGraw-Hill, 1221 Avenue of the Americas, New York, NY 10020. Hardcover, 177 pages, $14.95

Fascinating profile of Atari discusses the pre-Trameil era. The book examines the people and events that fueled the growth of the video game giant and contributed to its current crisis.

The Little Kingdom by Michael Moritz. William Morrow & Co., 105 Madison Ave., New York, NY 10016. Hardcover, 336 pages, $16.95

Interesting profile of Apple Computer examines the creation and growth of the company and delves into the personalities and background of Jobs and Wozniak.

Hackers: Heroes of the Computer Revolution by Steven Levy. Anchor Press/Doubleday, Garden City, NY 11530. Hardcover, 458 pages, $17.95

This book details the lifestyles of the programmers and engineers involved in creating the hardware and software. Many of the big names are here, along with numerous not-so-big names.

Fire in the Valley by Paul Freiberger and Michael Swaine. Osborne/McGraw-Hill, 2600 Tenth Ave., Berkeley, CA 94710. Softcover, 288 pages, $9.95

The book traces the development of the personal computer, from the primitive efforts of Charles Babbage to the Macintosh.

Bit by Bit: An Illustrated History of Computers by Stan Augerton. Ticknor & Fields, 52 Vanderbilt Ave., New York, NY 10017. Softcover, 304 pages, $17.95 (hardcover $29.95)

This history of computers, from mainframe to micro, is chock full of interesting photographs and reproductions.

Digital Deli edited by Steve Ditlea. Workman Publishing, 1 West 39th St., New York, NY 10018. Softcover, 382 pages, $12.95

A potpourri of short articles covers computer lore, culture, lifestyles, philosophies, and other interesting events. Sometimes fascinating, sometimes inane, the book nevertheless holds something for everyone.

The Computer Book of Lists and the First Computer Almanac by Edmund C. Berkeley. Reston Publishing, Reston, VA 22090. Softcover, 155 pages, $14.95

Lists, lists, and more lists populate this book. Subjects include people, companies, applications, Boolean algebra, cryptology, science, and philosophy.

TRS-80 Model 100

60 Business Applications Programs for the TRS-80 Model 100 Computer by Terry Kepner and Mark Robinson. Scott, Foresman and Co., 1900 E. Lake Ave., Glenview, IL 60025. Softcover, 276 pages, $17.95

This book contains 60 Basic programs to type into the Model 100. Applications include business analysis ratios, breakeven sales levels, depreciation, amortization, and business graphics.

25 Games for Your TRS-80 Model 100 by David D. Busch. Tab Books, Blue Ridge Summit, PA 17214. Softcover, 144 pages, $10.25

Another book of Basic programs features word games, arcade games, and even a stock market game.

The TRS-80 Model 100 by Danny Goodman. Simon & Schuster, 1230 Avenue of the Americas, New York, NY 10020. Softcover, 221 pages, $9.95

This introductory guide explores the hardware and software of the Model 100. It offers tips on transferring files to desktop computers and includes a security program to protect data.

User Guide and Applications for the TRS-80 Model 100 Portable Computer by Steven A. Schwartz. Scott, Foresman and Co., 1900 E. Lake Ave., Glenview, IL 60025. Softcover, 124 pages, $17.95

This collection of 14 basic programs features database, graphics, statistics, and music applications.

Financial Decision Making with Your TRS-80 Model 100 by Leslie Sparks. Tab Books, Blue Ridge Summit, PA 17214. Softcover, 144 pages, $9.95

Another book with type-in Basic programs features breakeven analysis, ratio analysis, forecasting, and other financial applications.

Introducing the TRS-80 Model 100 by Diane Burns and S. Venit.
Mastering Basic on the TRS-80 Model 100 by Bernd Enders.
Hidden Powers of the TRS-80 Model 100 by Christopher L. Morgan.
Practical Finance on the TRS-80 Model 100 by S. Venit and Diane Burns.
Games & Utilities for the TRS-80 Model 100 by Ron Karr, Steven Olsen, and Robert Lafore New American Library, 1633 Broadway, New York, NY 10019. Softcover, 198 to 340 pages each, $15.95 to $19.95 each

This series of five books examines the Model 100 in detail. It describes hardware and software, provides a comprehensive primer on Basic, investigates advanced programming techniques, offers financial programs, and includes a collection of entertainment and utility programs. ■

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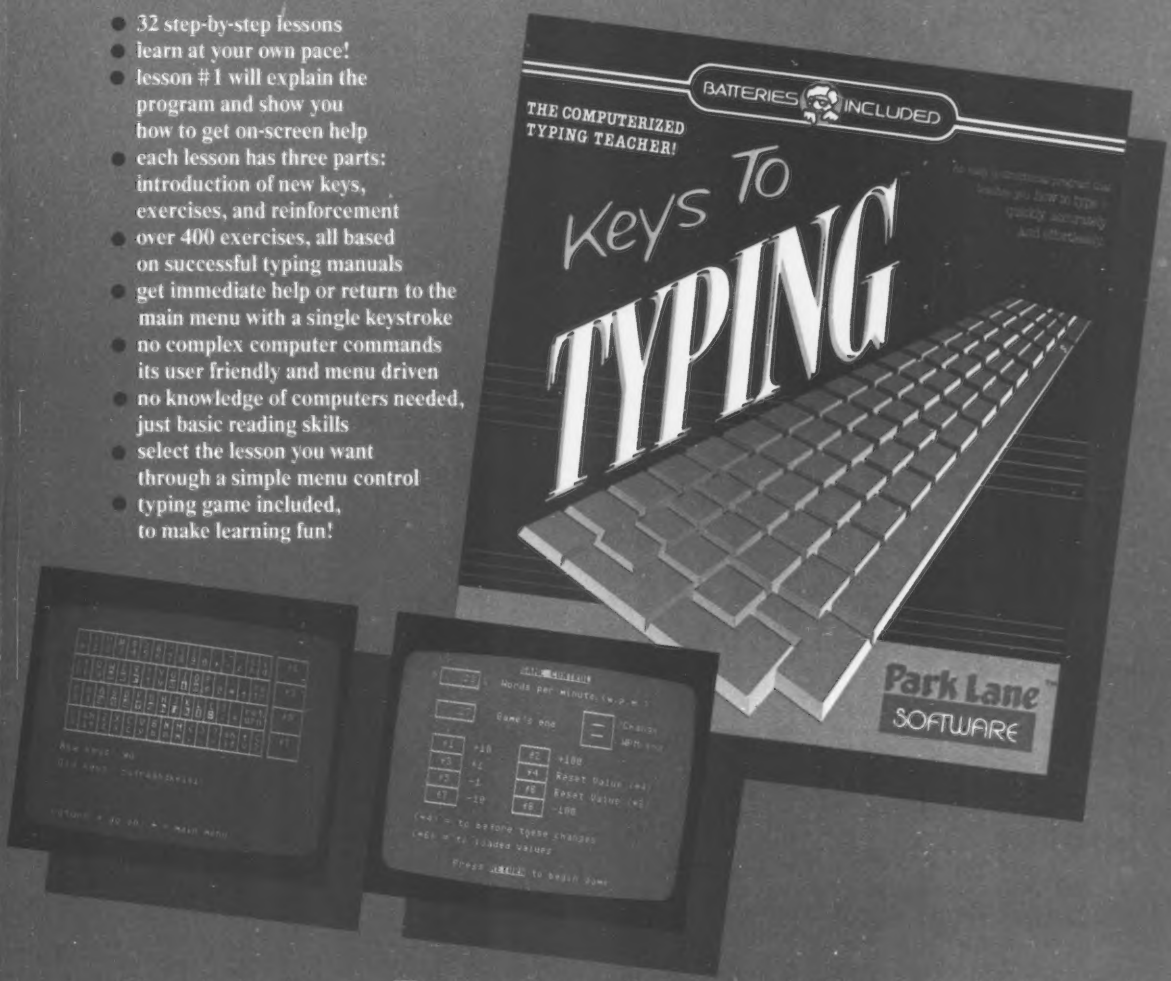

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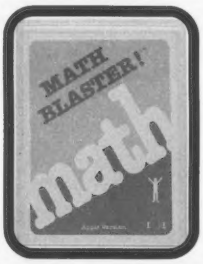

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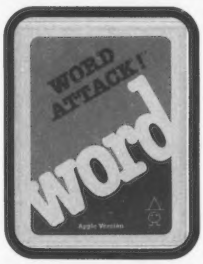

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IN REAL TIME

A look at how an Apple II handles takeout orders at Hunan—the first in a series of columns focussing on interesting applications

Sherrie Van Tyle

The lunch hour bustles at Hunan, a Morris Plains, NJ restaurant that offers southern Chinese specialties with intriguing names—General Tsao's Chicken, River Shan Scallops, and Seven Beauties Around the Moon. The thriving food-for-takeout business at Hunan has been streamlined by a unique program for an Apple II equipped with a light pen and a printer.

The program comprises the entire menu of 127 food items, the various sizes, prices, and special requests, including no salt and extra spicy. As an order is phoned in, the host or cashier touches the light pen to the monitor screen to enter the order category by category—appetizers, soups, entrees. The order is totaled automatically, printed out, and taken to the kitchen. The chef works from the print out, which eventually becomes the customer's receipt as it is tucked between the white food cartons when the order comes out of the kitchen.

Onscreen are the food categories—appetizers, soups, pork, beef, poultry, seafood. A touch of the light pen summons the category listing. The quantity and size are entered along with any special instructions—no msg, sugar, or salt, a little spicy, or even pepper steak with no beef—with the two-key combination CONTROL-I.

If a group discount applies, 10% is deducted automatically when the bill is totaled. The time of day and the customer's name is printed on the order; attached to the bottom of the printout are two receipts with the date, number of the order, tax, and totals. The hours, address, and phone number of the restaurant appear on the order too.

James Wen, who owns Hunan along with two partners, describes the program as the only one of its kind in the country. It was written by his son, Peter, a senior pre-med student at Harvard, who has been teaching computer courses for several years.

"He thought it would be good for us, especially during the busy times. Before, when a customer asked how much the takeout order would come to, we had to stop and add it up by hand. Now we can give a new total immediately, cancel and add items, and give another new total," Wen explains.

The speed of the program was an essential ingredient. Wen notes that the program would have tripled in speed had it been written in Pascal rather than in Applesoft Basic, but Pascal required extra disks. A printer buffer frees the computer to process a second takeout order while the first is being printed out.

James Wen at his Apple.

HUNAN CHINESE RESTAURANT

255 SPEEDWELL AVE., MORRIS PLAINS, N.J. 07950
TELEPHONE: (201) 285-1117

ITEM	SIZE	QTY	DESCRIPTION	PRICE	SUBTOTAL
APPETIZERS					
2	PORTION	1	EGG ROLL	1.00	1.00
5	LARGE	2	BAR-B-Q RIBS	7.25	14.50
SOUPS					
17	LARGE	2	WONTON SOUP	2.00	4.00
PORK					
49	PORTION	1	*TWICE COOKED PORK	6.50	6.50
BEEF					
41	PORTION	1	PEPPER STEAK	6.95	6.95
SEAFOOD					
63	PORTION	1	SHRIMP WITH WALNUTS	7.50	7.50
64	PORTION	1	*HUN-PUN SHRIMPS WITH PEANUTS (NOT RED SALT TODAY)	7.50	7.50
64	PORTION	1	*HUN-PUN SHRIMPS WITH PEANUTS	7.50	7.50

VANTYLE
SHRIMPS

TOTAL:	55.45
10% DISCOUNT:	49.90
TAX:	2.99
GRAND TOTAL:	52.89

SALE.1984.1.13
ORDER #2

TOTAL:	55.45
10% DISCOUNT:	49.90
TAX:	2.99
GRAND TOTAL:	52.89

Sample menu from Hunan.

Reducing errors and mechanizing the order process have saved him money, although he has invested about $3500 in hardware and peripherals—Apple II+, Apple III monitor, expansion board, light pen, two disk drives, Epson printer, and Quadram Microfazer. The cost of the custom-written software, of course, would be extra. Wen explains that he could have spent more than the total hardware and software cost to pay the salary of a takeout person to process orders by hand.

Does Wen use the Apple for other purposes, for example, restaurant inventory? Taking the inventory of the pantry is actually quite simple, and he can check items quicker with a paper and pencil, he says. He and his son are thinking about other ways to use the Apple in the restaurant, however.

Use of a light pen rather than the keyboard means that a new cashier needs no special training to use the program. The cashier need touch only the spacebar to print an order or to return to the main screen menu.

The program has been in use at Hunan for over year with few problems. Ideally the takeout order would go directly to the kitchen, but the smoke and grease in the air would damage the computer and printer.

A cashier can easily answer the phone with one hand and wield the light pen with the other; as the phone rings, Wen demonstrates with a deft twist of the wrist, noting with satisfaction, "This program is 99% perfect for our needs."■

Photography by Jeff MacWright.

TELECOMMUNICATIONS TALK

Notes from a surgeon watcher, the facts about fax, and MultiModemocracy

John J. Anderson

I'm thinking of writing a letter to the Surgeon General. I feel he may be remiss in his duties. How well I remember when he spoke out vehemently against video games. The act conjured visions of youngsters in arcades across the nation suddenly taking up smoking in response. But that is not my criticism of the Surgeon General.

Complaining Again

My complaint is that he has ignored the dangers of modem abuse.

My suggestion to the dear man is a message to be emblazoned on the sides of all modems sold in this country. Warning: continued use of this product may be hazardous to your bank card.

I should know, for I am a junkie. It has gotten to the point where the only time I am truly comfortable is when I am logged on. I have bags under my eyes and a crick in my neck. My sleep patterns are erratic. And I can't get enough of that handshaking protocol. I started out at 300 baud, never dreaming it would lead to harder stuff. But once I got a taste of 1200 baud, nothing else could get me off. US Robotics stopped by the lab a couple of weeks ago and told us that 2400 baud was now ours for the asking. They loaned us a sample—it's easy to be generous when you know you're going to hook your customers for life. After operating at 2400 baud for half an hour, 1200 baud seems like a snail on a slow boat.

Then there are the network services themselves. Dow Jones, Compuserve, the Source, PlayNet, NewsNet, Delphi—all of them know my credit card number. No, I'm wrong—at least one siphons money directly from my checking account. That "service" is called Checkfree, and I assume it takes its name from the fact that the provider feels free to write its own checks on behalf of the providee. All this evil sneaks past my checkbook in athletic socks in the dead of night, along with those blank cassettes and all the other stuff I forgot I charged. Where will it end?

It won't. Having quit smoking at least five times in the same number of years, I can speak with some assurance on this topic. Telecommunicating is a much less deadly habit, and one to be enjoyed so very much more. I have made many real and true friends who share many of my interests. I have learned much and continue to learn. I am no longer engaged in a solitary pursuit when seated at my computer. I am connected. I am plugged into the community. Computer owners of the world, unite. And use your modems to do so.

Mac Fax

The major conduit of connection for me lately has been the Macintosh computer. Having access to connection via the IBM, Apple II, Commodore, Atari, and Tandy Model 100 computers, I have known of the power of the download for some time. This is the ability to capture

Figure 1. Reproduced here (at reduced size) is an image created with KoalaVision, downloaded via Compuserve, converted with BinHex, and printed on an Imagewriter. It is most impressive.

not only text files over the phone, but files that convert to assembly, Basic, Logo, Pascal, and other high-level programming languages. The files then run as programs in themselves. Of course the Macintosh also sports this capability (see this month's Apple Cart).

But that was not enough for the Macintosh contingent on the Compuserve Information Service. These minds, which fairly represent a subset of the cream of the Macintosh programming crop, knew that the key to telecommunicating effectively on the Mac would involve more than the uploading and downloading of mere text and program files. A means had to be developed whereby text files could be converted to binary form—and from there be converted into assembly language programs, as well as *MacWrite* and *MacPaint* documents.

The organic effort that resulted in a workable system involved the input of many people—people working with and refining other people's code—and of course, a massive amount of debugging. While following the track of this development, I have learned more about programming the Mac in a shorter time than would have been possible working from any magazine or book. The on-going process of the Mac program development lives in sections 3, 4, and 5 on Compuserve MAUG.

In the beginning, there was Dennis Brothers (70065,172). To his seminal MacTep terminal program (see the October 1984 issue of *Creative Computing* for more information on that program), he added an overlay that would convert a text file to binary. It did so with some brute force from Basic, and its major problem was that it was terribly slow. Then Overlaid MacTep met with Ronald Nicholson (71505,410) on Compuserve and begat BinHex 1 or Thereabouts, a stand-alone Basic program which converted extant text files to binary format—still very slow, and also rather buggy. BinHex 1 or Thereabouts met with William B. Davis (71505,410) and eventually became BinHex 3.0, which, while still slow and slightly buggy, worked well enough of the time to be worthwhile.

An overlay added by Bob VanBurkleo (74435,1373) made Basic BinHex more aggressive at finding file

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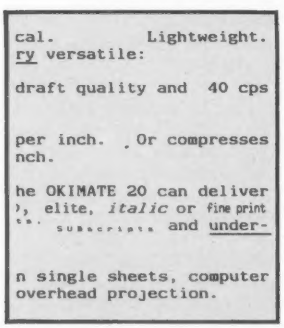

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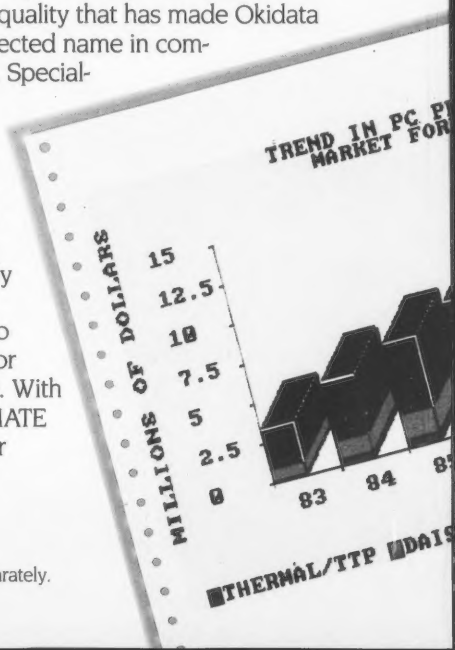

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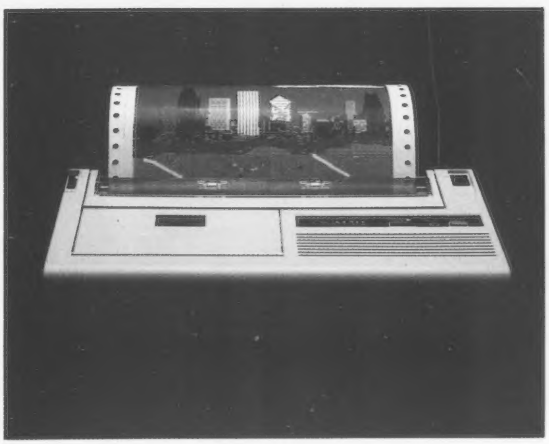

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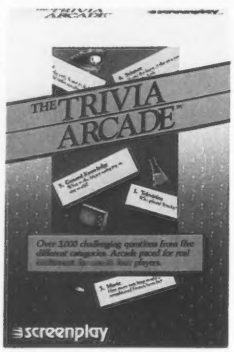

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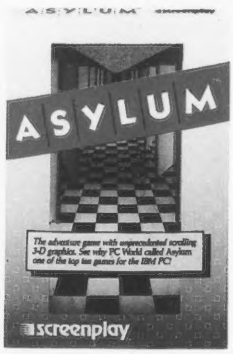

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headers. Finally, a fine assembly language programmer by the name of Yves Lempereur (74016,1741) begat a smooth, fast, and debugged assembly version of BinHex. Of course you have to convert it using previous versions of BinHex, and the process is somewhat evocative of putting on your socks after you've laced up your sneakers. But Yves' version of BinHex is sitting in XA3 of MAUG, waiting for you to bootstrap your way to it.

Once you have done so, you can upload and download assembly language programs, desk accessories, *MacWrite* and *MacPaint* files with the same ease as you print out a text buffer. The latest version of BinHex makes use of pull-down menus and toolbox dialogs, and is as professional a Mac program as you will encounter. And it is the result of an ad hoc effort, mounted in public, by a group of dedicated programmers for whom monetary gain was not, at least in this case, a motivating factor. Dare I assert that all that is good about the hacker ethic is alive and well and living on Compuserve? I won't. Rather, I'll simply advise you that BinHex is available to you for the price of your connect time.

The ramifications of transmission of *MacPaint* documents are far-reaching and most dramatically underscored when considered in conjunction with the range of products which open *MacPaint* to the input of a camera, such as KoalaVision, MicronEye, and other announced products. (See Figure 1.)

At the offices of *Creative Computing*, we rent a Rapicom fax (for facsimile) machine to send documents to and from Ziff-Davis headquarters in New York. I must assume that there exists at least one machine on the New York end of things in order to make the system worthwhile. Rental of such a system costs thousands of dollars a year. With two Macs, two imaging systems, BinHex, and a phone, you can create a system for document transmission at a cost undreamed of a year ago, and still largely undreamed of today. The resolution of a system like the one described above approaches that of dedicated fax machines. It is certainly good enough for most of the purposes for which we use a fax machine in our own business.

The major disadvantage: the current system is relatively slow. At 1200 baud, transmission of a single *MacPaint* page might take up to 8 minutes, depending upon its complexity. At 2400 baud, of course, efficiency is increased in an inverse ratio to connect time. And there is no reason to believe that one of the wizards in MAUG won't devise a data compressor to improve the transfer rate even at 1200 bps. Keep it up, fellas.

MultiModem

I have been using the MultiModem from MultiTech on a daily basis for over three months now and have nothing but praise for its operation, reliability, and ease of use. The MultiModem is a 300/1200 baud machine, with autodial,

autoanswer, pulse or tone dialing, verbose or terse result codes, automatic hang-up on carrier loss, a built-in speaker, LED function readouts, and a host of "smart" features.

Fully compatible with the Hayes SmartModem, the MultiModem configures and behaves just as if it were a Hayes. The result codes, command structure, and even DIP architecture, stick strictly to the Hayes standard. All the Hayes-compatible terminal software at the lab, for the IBM, Apple II, and Macintosh, ran without a hitch on the MultiModem. Its makers have done a fine job of ensuring the total compatibility of their product.

In addition, the MultiModem has a few features that might qualify it as even smarter than the Hayes. Three new codes detect ring, dial tone, and busy signal tone. This helps avoid the very common pitfalls of carrier-detect timeout, dialing without a dialtone, and sitting on a busy signal.

As they say on late-night TV, "and that's not all." In case your terminal package does not store phone numbers, the MultiModem can store six numbers onboard (each may include a maximum of 30 characters). These characters may include digits, pauses, and even switch codes to move from pulse to tone or tone to pulse in mid-dial. The phone number memory is backed-up by a built-in battery.

Stored numbers can be auto-redialed or stacked to call each number sequentially until a connection is established.

The unit has a standard DB-25 RS-232 connector on the rear, and wiring up cables for it was relatively simple. The documentation is quite strong, and helped on this score. The internal speaker lets you hear the phone line to keep track of the proceedings; it cuts out automatically as the Hayes does when carrier is detected. Configuration of the DIP switches requires removing the snap-lock case, but this procedure is quite simple, and since it is unlikely that most users will be moving DIP switches regularly, as I do, I won't make this a complaint.

The only complaint I can make is that for $549 list, MultiTech could have supplied the unit with an on-off switch, which they seem to have ignored. I was convinced that there must be one, and it was just cleverly concealed, but to this day I have not found it. Other than that, I have not seen a better modem for the money. Its transmission is clean, error-free, and reliable. What more can be said?

VPI Phone Surge Protector

You may already have protected your power lines against surges, but have you protected your phone line? According to Video Peripherals, Inc., telecommunications lines are commonly subject to surges as well. They can be caused by power system faults, dropped power lines, and lightning. The VPI 145 Telecommunications Line Protector acts as a modular extension cord and in the process diverts surges through the line whenever they occur. It is transparent in use and is activated only in the event of an abnormality. $39.95.

Make Contact

Want to get in touch to talk about telecommunications? Email me via Compuserve—my ID is 76703,654—or better yet, stop by Creative Computing Online at PCS-22. Type to you later! ■

Firms Mentioned in This Column

Multi-Tech Systems, Inc.
82 Second Ave. S.E.
New Brighton, MN 55112
(612) 631-3550

Video Peripherals Inc.
1667 W. Ninth St.
Long Beach, CA 90813
(213) 437-4883

Photography by Jeff MacWright.

Tools That Make the Difference—and Indifference

An old saw and an especially tired one: Change is the only constant

John J. Anderson

As the microcomputer industry continues its larval metamorphosis through the stages of growth and maturation, *Creative Computing* is changing along with it. We have not always been as you see us now. Some of you are glad for that fact; some of you are not so glad. While we realize that is unavoidable, we continue to listen. At the same time we have never let go of our original commitment, first set out in 1974. We have at all times attempted to respond to the new facets and new perspectives of this transmutational industry.

When *Creative Computing* began, there were no microcomputers in business—only the promise of microcomputing in business. The advent of the "personal" computer was viewed with excitement, because of its potential as a tool—a productivity tool and a creativity tool.

Now micros are in business to stay, as is *Creative Computing*. The business beat has always been of interest to our readers—for many it is a pre-eminent interest. As recent issue themes attest, *Creative Computing* is serious about business hardware and software coverage. We know that you are interested in the computer as a productivity tool. You are interested in using the micro as a means to complete a certain task or series of tasks. You are interested in finding the right combination of tools, both hardware and software, to solve a problem most effectively and least expensively. You turn to us to read the truth about available products. Not to read a news report or press release, or to hear why the manufacturer himself thinks he has a hot product, but to hear what an experienced, responsible critic has to say about it. We continue to strive to provide that forum in the pages of *Creative Computing* magazine.

The perspective that has always separated us from competitors and pretenders, however, is our unabashed commitment to computers for computers' sake. That is what put us on the map first, over ten years ago, and that is what makes us what we are here in 1985—a magazine for those interested not only in how computers can make our work easier, but how they can make our minds stronger and smarter. It can be put very simply: yes, a computer is a tool, but it is emphatically *not* a tool in the same way that, say, a monkey wrench is a tool. A computer is a tool that is used to *make* tools. And making tools is what *homo sapiens* are all about. Our earliest readers knew that well—they desperately wanted computer technology at their fingertips for the purpose of crafting tools. And though by today's standards they were merely chipping a sharp edge on a pointed stone, they were the first of a new breed of craftsmen.

It occasionally amazes me how many otherwise intelligent members of our industry have no idea how important a distinction is the one I am attempting to describe here. They look at hardware and software as respectively equivalent to a phillips head and a sharp screw. Such a view is not incorrect; it is simply incomplete. It is blind to the most important truth concerning the nature of the computer—that while it represents a powerful tool for the accomplishment of tasks, it also represents the modern task of the accomplishment of tools. And as any anthropologist will tell you, a human culture is defined in terms of its tools. We are what we make, so to speak. Art is about tools, too—but those tools are applied in a different way.

As computers continue to get cheaper, easier to use, and accessible to more people, they have an increasing effect on the fabric of our minds. Just as the evolution of the opposable thumb and the interlock of hand, eye, and brain have shaped the development of our species, the computer is already shaping the development of our minds. It is not as specifically important that we use computers to create a spreadsheet or maintain a database as that we utilize it as a personal extension of the mind—strengthening the breadth, scope, and clarity of that mind. A Nautilus machine, if you will, for developing brain musculature.

So what? Right? There are those of us who are obsessed with computers for the reasons outlined above. And there are those of us who will continue to care about the technology simply in terms of what is available off the shelf in the way of a good set of pliers to twist the lid off a specific, nasty problem. I bear no malice toward those who do not share my obsession—in a way I rather envy them their peace of mind. But the point to be stressed is that the microcomputer industry is very basically different from any that has come before—whether or not you believe it to follow established rules of business. Ours is the industry wherein the future of our own minds lies exposed. And it is up to us to keep that future on track—through imagination, criticism, innovation, and discussion. (Note please that these are wholly human elements.) To do otherwise is to ignore our job as human beings, which is to create, through our tools, the world that we want to live in. The people who miss that point will wait, as they have in the past, for the rest of us to show them the way. ■

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Easy to use, the Personal Planner requires only a fifteen page documentation. A complete set of input sheets is also included. Available for the IBM PC, Sharp PC 5000 and other IBM compatibles. Also available on Apple II, the DEC Rainbow and other CP/M compatibles.

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Choosing and Using
Tax Software
Packages

Russ Lockwood

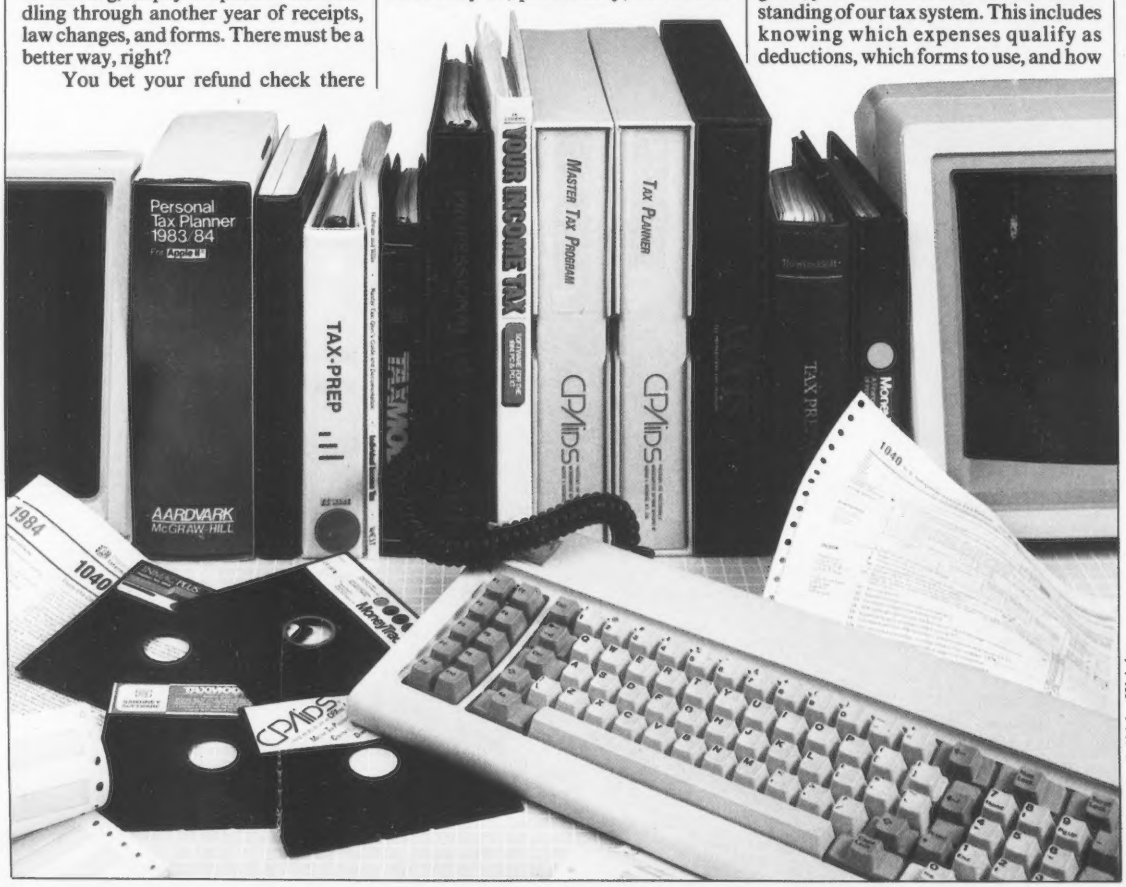
Computer Assisted Tax Preparation

With only a month and a half left before the day of reckoning, millions of taxpayers prepare to undertake the dismal task of filling out their tax returns. Shoe boxes emerge from closets, scraps of paper smother dining room tables, and blood pressures inch upward. Calculating and recalculating, taxpayers spend hours muddling through another year of receipts, law changes, and forms. There must be a better way, right?

You bet your refund check there is—a computerized tax package. More and more do-it-yourself tax preparers are discovering that pairing their computer with a tax program helps organize receipts, examine alternative tax strategies, fill out forms, and sometimes, even pare their tax bills too.

Tax software should save you time or money or, preferably, both. Tax preparation is painful enough without complicating matters with time consuming data entry and superfluous calculations. Consequently, ask yourself if you really need a tax package. Slick marketing notwithstanding, many people really don't.

First, to make good use of a tax program, you must have a reasonable understanding of our tax system. This includes knowing which expenses qualify as deductions, which forms to use, and how



Photography by Jeff MacWright.

certain tax strategies affect the tax you pay. A tax program does not provide advice on income averaging, capital gains, tax credits, or any other of the more involved aspects of tax preparation. If you are a total tax novice, a tax program is not likely to help you.

Second, your taxes should be complicated enough to require a program. For example, if you are single and file form 1040EZ (sometimes referred to as the short form), you certainly do not need a tax program—unless you want to explore the ramifications of filing a regular Form 1040.

On the other hand, if you intend to file Form 1040 and any of the attached schedules, a tax package may be just what you need. In general, the more complex your financial situation, the greater your need for a tax package.

But what if you take your return to a certified public accountant? If you do not mind paying a professional to make sense out of whatever collection of receipts and cancelled checks you may have accumulated during the year, you probably do not want a tax program. However, most CPAs charge by the hour, and presenting organized information decreases the time it will take one to prepare your return. In many cases, the amount you save on fees will exceed the cost of the software. As a bonus, your CPA can concentrate on creative tax strategies rather than laborious data collection.

Tax programs divide into three categories: record keeping, tax planning, and tax preparation. Of course, many packages cover more than one category. The trick is to choose the program that offers the features you need.

Almost anyone can use a record keeping program. In essence, this category combines the shoe box with a calculator. The program allows you to divide expenses into several categories and attach a comment to each amount. The program keeps a running total for each category and a grand total for all categories. In the more complete tax packages, you can automatically move these totals to the appropriate lines on the tax form.

If you have ever filled out a Schedule A or Schedule C, you will appreciate a record keeping program. If you are diligent and enter your expenses as they occur, an end-of-year printout provides a tidy listing. When tax time rolls around, you can concentrate on tax planning and preparation.

Tax planning software lets you examine various tax scenarios and strategies. These programs help you explore the tax implications of different combinations of income, investment, and expense. For example, you can see what happens to your return when you place money in an Individual Retirement Account, take a lump sum distribution of pension money, or use investment credits.

While a program cannot advise you what to do with your money, it can analyze your options and present you with the results. As always, the choice is up to you. If your tax return is sufficiently complex that speed of number juggling is important, you should consider a tax planning package. It may suggest a strategy you have never had time to consider.

Tax preparation programs help you fill out the multiplicity of forms released every year by the IRS. In most cases, the forms are reproduced on screen and you plug in all the numbers you have. Preparation programs can usually move numbers from the various schedules directly to Form 1040.

Some preparation programs come with IRS-approved forms that load into your printer. You can use the resulting printout as your return. With other software, you transfer the numbers by hand from a printout to the actual forms and schedules.

Whether record keeping, planning, or preparation, all tax programs are either stand-alone packages or templates to a spreadsheet. A stand-alone package runs independently of other software. It may be part of a family of tax programs, but you can plug it into your computer and run it by itself.

A template is a specialized application that runs with another program. Several companies offer tax planning templates for popular spreadsheet programs such as *Lotus 1-2-3* and *Multiplan*. The labels and formulas are already set up for you; all you do is enter numbers.

Our discussion involves primarily federal tax programs. However, many companies offer state tax programs too. The features to look for in a federal or state package are practically identical.

Financial Features

The features you want determine the type of package you need. People who want a record keeping program to organize and present data to an accountant or tax preparation service do not need a full-featured package. Likewise, a businessman filling out a return for a sole proprietorship or small business requires certain specific schedules. Certain features, however, should be present in all types of tax programs.

Any tax program, for example, should allow you to insert, delete, and replace any number easily and then recalculate totals automatically. If a program cannot do this simple substitution and arithmetic function, steer clear of it. Every year the IRS receives thousands of returns with arithmetic errors. Any error, intentional or not, that results in underpaying your taxes leaves you liable for interest and penalties. A program that can cause such an error if you forget to press a key to update the totals saves you neither time nor money.

You should be able to call up forms, categories, and schedules from anywhere within the program, along with appropriate safeguards to save your work before erasing it from the screen. Obviously, some computers, like the Macintosh, can do a better job at this than others. However, the principle is the same: ease of movement within the program.

Also, a tax program should allow you to print out anything typed into the computer, including subtotals, totals, forms, and schedules. In many cases, looking at a hard copy printout proves easier than switching between screens.

On a more nebulous note, the documentation should explain the program fully, with extensive examples and perhaps even a sample run. We prefer manuals that provide too much information to those that offer too little.

A word about speed: Obviously, the faster a program performs calculations, the better. However, in most cases speed is a function of hardware. For example, the same package will run faster in an IBM PC AT version than in an Apple II version. For most people, speed is not a primary consideration; other features should weigh far more heavily in the selection of a tax program.

If you are looking for a package, you may want to consider side by side comparisons of various tax strategies on the screen. If you are deciding between two or more strategies, it is better to see all of them on the same screen rather than complete one strategy, print it out, complete another, and so on.

Furthermore, tax planning programs should cover the more esoteric tax computation options, such as income averaging and alternative minimum tax. Income averaging is a viable option should you find that your income in this

year is substantially higher than in the four previous years. This means the program must be able to accept five years' worth of tax data. For an explanation of aspects of alternative minimum tax, see the sidebar below.

The right tax preparation program for you *must* include all the forms and schedules you plan to use. Not every program incorporates the entire bingo card of forms and alphabet soup of schedules. If you need Form 2441, Credit for Child and Dependent Care Expenses, and Schedules R and RP, Credit for Elderly, make sure the package has them before you buy.

On the other hand, if you require only Form 1040 and Schedules A (Itemized Deductions), B (Interest and Dividend Income), D (Capital Gains and Losses), and E (Supplemental Income Schedule), then buying a high-powered and equally high-priced tax package represents overkill. To generalize, the more forms and schedules the better, but, beware of paying for extra features you will never use.

The information on each schedule should be easy to add onto the main Form 1040. You should never have to transfer subtotals from schedules by hand. Once again, make sure the program automatically updates the totals.

Tax preparation packages must use the current tax tables. A program that gives you 1983 tables is useless for 1984 tax returns. The inevitable changes in tax law can cause you to overpay or underpay taxes. Overpaying certainly does not save you money, and we all know the potential penalties for underpaying.

Many companies offer yearly updates to their package for a modest fee. These prolong the life of your package by providing the current rules, regulations, and equations necessary to prepare a correct return.

Man Versus Machine

Before you consider dumping your CPA for a tax program, remember that a program does not provide advice on filing your tax return. A tax package is only as good as the information that is put into it. And where the information is put into it can be important, too.

In general, CPAs know more about taxes than non-CPAs; after all, that is their profession. A qualified CPA can navigate the maze of tax laws, identify deductions, and help you pay the least tax possible.

The expertise of a CPA extends beyond tax preparation and into tax planning. The date and terms under which you obtain income, for example, from the sale of stock or a house, can affect future taxes. Retirement and pension plans further complicate matters. A CPA can aid you in this sort of tax planning.

Finally, if the IRS computer picks your return to be audited, a CPA can describe how your taxes were prepared and explain the options open to you. That is support no software company can offer.

Line 12: Business Income or (Loss)

Everybody thinks about deducting the cost of his computer. That is all well and good, except certain changes in the law have tightened up requirements for deducting computer costs (see sidebar on page 39).

In the broadest terms, a computer is like a car: you may deduct certain costs if it is used for business purposes. The same is true of peripherals like printers and modems. Software, however, can be tricky. In some cases, you can deduct it as a one-time expense. In other cases, you must deduct it over five years. This is certainly a matter to discuss with your CPA, not your tax program.

A business may also be able to avoid certain taxes if it buys and receives software over a modem (see page 44).

Incidentally, tax preparation can be a business expense, and your costs can be deductible. This includes the price of a tax package. Likewise, time spent using a tax program may count as a business activity, which increases the percentage of business use of the computer.

Return of the Tithe?

The biggest variable in buying a tax program this year may be the tax reform proposal currently before Congress. The so-called flat tax would simplify tax forms, requiring you to pay a set percentage of your income. With very few adjustments to the income, most tax packages would become superfluous.

However, the proposal does not change 1984 taxes, and with opposition from special interest groups, the future of the flat tax remains uncertain. Tax year 1984 remains firmly in the grasp of the progressive income tax.

With microprocessor speed and precision, a computerized tax package can help you organize receipts, plan tax strategies, and fill out forms faster than by hand. Reducing mental and physical wear and tear is important to many people. That in itself may be worth the price of a tax program. And maybe, just maybe, one of these tax programs can increase the size of your refund so you can look forward to April 15 this year. ■

Short descriptions of tax software packages begin on page 37.

But Does It Do A.M.T.?

Most tax preparation programs focus on the "normal" method of calculating tax, and some have the provision to consider income averaging. However, you may be in for a big surprise—and a hefty tax bill—if you minimize your tax using certain tax shelters and fall under the provisions of the Alternative Minimum Tax (A.M.T.).

The A.M.T. is a mechanism designed to insure that people do not minimize their taxes—or avoid paying them altogether—by making use of certain tax shelters (or loopholes). There are no firm rules about who is subject to the A.M.T. A rule of thumb says that an individual whose tax preference items come to at least 40% of gross income or who has capital gains in six figures would be a candidate for the A.M.T.

Calculating the A.M.T. is a complicated exercise, particularly if you want to consider alternatives. There are no tables, only a complicated series of steps and formulas. Only some itemized deductions can be claimed (charitable donations and interest, but not state and local taxes or tax preparation fees or advice). The treatment of depreciation is especially complicated, and most investment tax credits go out the window altogether.

A CPA we talked to said you really need a computer to consider the "what if?" assumptions of the A.M.T. Thus if you think you might be subject to the A.M.T., be sure the program you buy includes provisions for considering it. In addition, you should probably invest in some competent tax advice from a CPA who is well versed in the A.M.T.—*DHA*

READ ONLY

A review of the IBM Personal Computer Family. Vol. 2, No. 1

GRAPHICALLY SPEAKING

E Pluribus Unum. IBM Personal Computer graphics hardware covers a lot of territory, from graphics cards and monitors to printers and plotters. Color monitors alone are available in four models that can satisfy varying levels of color graphics requirements, from home or office to the laboratory.

Two of the most recent, for example—the IBM PC Enhanced Color Display and the IBM PC Professional Graphics Display—offer advanced business and technical graphics capabilities. The IBM PC Enhanced Graphics Adapter can also be used to extend some of those capabilities to the IBM PC Monochrome Display and the IBM PC Color Display.

This growing array of hardware products is unified by a strong IBM Personal Computer graphics software development strategy, one that can dramatically improve your programming efficiency and broaden the application potential of your graphics programs.

Independence. Graphics software has traditionally been written for a specific graphics device and couldn't be run on a second device without complex and time-consuming reprogramming. By using the IBM Personal Computer Graphics Development Toolkit, however, you can now develop software that is compatible with all existing IBM PC graphics hardware products.

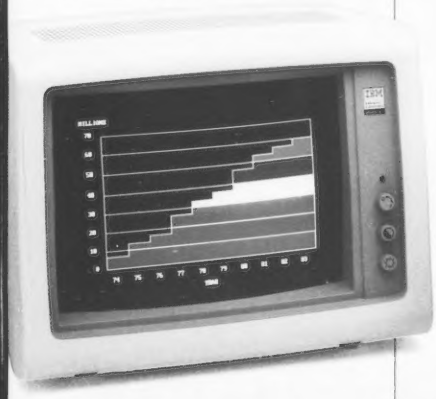
This is possible because the Toolkit contains a constant interface—the Virtual Device Interface—to which all applications can be written. The result is device-independent software.

The Graphics Development Toolkit allows you to program bit-map graphics to a 32K x 32K addressable point window and to combine graphics and text capability on a variety of graphics devices. The device drivers necessary for information exchange with existing IBM PC graphics devices are included in the Toolkit, as are a driver for the IBM PC*jr* Video Subsystem and language interfaces for the IBM BASIC, FORTRAN, C, and Pascal compilers and for the IBM Macro Assembler.

The right tools. Several products from the IBM PC Engineering/Scientific Series also play an important part in the IBM PC graphics programming strategy. All of them incorporate the Virtual Device Interface discussed above.

The IBM Personal Computer Graphical Kernel System—which is consistent with Draft ISO and ANSI GKS Standards—gives you a common high-level graphics language that can help further simplify your programming tasks. It also helps increase the portability of applications between computer systems.

In addition, the IBM Personal Computer Plotting System provides a



IBM Personal Computer Enhanced Color Display

IBM Personal Computer Graphics Development Toolkit

IBM Personal Computer Professional Graphics Display

subroutine library of functions that help make it easy to produce a wide variety of charts and graphs. There's also a Metafile Interpreter available to facilitate retrieving and manipulating graphics images.

This range of IBM graphics programming tools is designed to help speed and simplify nearly every aspect of your graphics programming work. They can substantially reduce the time and tedium involved in program development, and the device independence they provide can help increase the flexibility of your finished programs. Device independence also helps extend the life—and marketability—of your programs, because applications developed with the Virtual Device Interface can interface with future generations of graphics devices.

HARDWARE NEWS

Lock and key. Troubled by people who try to peer without permission at sensitive business or personal data stored in your IBM Personal Computer? You can go a long way toward locking it up with the IBM Personal Computer Keylock Option.

Fifteen minutes and a screwdriver are all you need to install the Keylock Option on your IBM Personal Computer, IBM Personal Computer Expansion Unit, IBM Personal Computer XT, IBM Personal Computer XT/370, or IBM 3270 Personal Computer.

Once your system unit is outfitted with the Keylock Option and locked, it will be difficult for someone without the proper key to access the hardfile and all the valuable software it contains. Also, other users in a network won't easily be able to access or tamper with data stored on your system. In fact, when the Keylock Option is installed, the system unit can be powered up only with the key and can't be powered up through the CRT plug port.

And with the Keylock Option locked in place, the system unit cover can't be removed—short of forcible entry—by just anyone who might want to browse around inside your IBM PC during off hours.

Small packages. If you need more memory but don't have a full-size slot available in your system unit, the IBM Personal Computer 256KB Memory Expansion Option may be the answer. It offers 256KB of additional memory on a short card (5 inches rather than 11 inches) with a comparably diminutive price.

That makes it ideal for adding memory to the IBM *Portable* PC. This Memory Expansion Option is also a compact way to beef up your IBM Personal Computer or IBM Personal Computer XT (which has two slots for short cards).

Talkies. The combination of film and sound revolutionized the movies. Speech capability may soon spell an equally big change for computers. The IBM PC*jr* Speech Attachment is a step in that direction.

It's a side-attached option for the PC*jr* that permits speech and sound under control of software such as IBM Writing to Read.* The Speech Attachment contains 196 words and sounds in its ROM. Cartridges manufactured with prerecorded speech can be used under program control. And with the purchase of a microphone and the proper software, you can even record your own speech data on an IBM PC*jr* diskette.

So far, at least, the last word is ours.

*Developed by Dr. John Henry Martin.

WHAT'S THE PROGRAM?

Retrieval. Whether you work with pen and paper or the latest word processing software, writing documents is only half the battle. Try finding them again a month later.

We don't claim to have discovered a better system for paper filing. But a new software package from IBM—Office Correspondence Retrieval System (OCRS)—does promise to make life a lot easier for those who store written work on a fixed disk or who have a library of documents stored on diskettes.

OCRS can help in two ways. First, it makes document abstracts and stores them in a summary file for future reference. OCRS automatically searches out keyword information such as date, subject, sender, or any other significant word. You can also add keywords other than those actually contained in the document.

Second, and most important, simple English language queries will prompt OCRS to locate the original document. A document search request can be entered as individual words or complete sentences. You don't need to learn a special query language.

OCRS can abstract and retrieve any type of file containing ASCII text such as letters, charts, and computer programs. It can also directly abstract documents written with IBM

Help protect your software and hardware with the IBM Personal Computer Keylock Option

IBM PCjr Speech Attachment

Writing Assistant, IBM PCWriter, and WordStar® and documents using the IBM Revisable Form Text Document Content Architecture (RFTDCA). Documents can be converted to RFTDCA data format by IBM DisplayWrite 1 and 2 and PCWriter.

With OCRS, missing reports may be a thing of the past.

Evolution. Like their human language counterparts, computer languages and operating systems change and evolve. Occasionally, an entirely new dialect crops up, such as the IBM Personal Computer XENIX® Operating System.

IBM Personal Computer XENIX is derived from the UNIX® Time Sharing System. Several enhancements designed specifically for the IBM Personal Computer AT allow you to take full advantage of its power. IBM Personal Computer XENIX supports both single-user and multi-user configurations. It also enables you to run several programs at the same time—you can, for example, compile a program in the background while you edit one in the foreground.

There are two additional packages available to be used with the IBM Personal Computer XENIX operating system that deserve special mention. First, the IBM Personal Computer XENIX Software Development System gives you tools to generate code suitable for either XENIX or IBM Disk Operating System (DOS) operating environments. Second, there's an IBM Personal Computer XENIX Text Formatting System that can help simplify the production of technical reports, memoranda, formal papers, and documentation—it's especially useful for publications that require technical or scientific formats.

IBM DOS has been updated twice recently. DOS 3.0 provides all the functions contained in DOS 2.1 plus enhancements to support the IBM Personal Computer AT. DOS 3.1 incorporates further enhancements that support the IBM Personal Computer Network.

There are also new versions of the IBM BASIC Interpreter and of the IBM Macro Assembler. BASIC 3.0 contains several noteworthy new functions that provide access to user-installed device drivers. They are: SHELL, IOCTL and IOCTL$, ERDEV and ERDEV$, and ENVIRON and ENVIRON$.

The recent 2.0 version of the IBM Macro Assembler supports both the 8088 and 80286 processors and the 8087 and 80287 Math Co-processors. Other additions include a new more powerful Linker, a Library Manager, and a Structured Assembler Language Preprocessor. And you can use the IBM Professional Debug Facility to put the finishing touches on your assembler language programs.

Office Correspondence Retrieval System Software from IBM

See your authorized IBM Personal Computer dealer or IBM Product Center about an economical trade-up from your 3.0 version of IBM DOS to version 3.1 or from Macro Assembler version 1.0 to 2.0.

WordStar is a registered trademark of MicroPro. XENIX is a registered trademark of Microsoft Corporation. UNIX is a registered trademark of AT&T's Bell Laboratories.

BUDDING USER GROUPS

Getting started. Ever considered forming a group to exchange ideas about using your IBM Personal Computer, but never got around to sorting out all the start-up details? Or, once past that first stage, does your group find it difficult to come up with new information, presentation materials, and connections with other groups? Help is at hand.

Because of the growing interest in PC user groups all across the country, IBM has expanded its efforts to encourage new groups and to support existing ones. There's no charge for this assistance, and all groups—whether they have 10 or 1,000 members—are eligible for the same basic level of support.

For starters, the IBM User Group Support department will provide a package that introduces you to some of the basics of organizing a club. It includes a sample constitution and bylaws, suggestions for officers' titles and duties, and a list of other groups already in the program.

Staying started. Once the initial burst of enthusiasm is past, a PC user group needs more than a common interest to maintain its membership—it needs some focus for that interest. IBM can provide information and materials to help keep your group going.

Perhaps the most impressive

form of support is a monthly newsletter on diskette, complete with color and sound. It includes reviews of new products, editorial commentary, and technical tips. The newsletter also carries reprints of the best articles from participating group newsletters, so you can follow the activities of other user groups around the country.

Other sources of useful information are the PC User Group Phone Line and PC User Group Bulletin Board System. You can use the phone line to get answers to questions about the organization and functions of a user group and to find out about other groups in your area.

The bulletin board, which can be accessed through your IBM Personal Computer, carries new production information from the day of announcement. It also provides a means of communicating with other PC clubs.

Finally, to provide topics of interest for your regularly scheduled meetings, IBM will send timely presentation and demonstration materials. Better still, group officers can use the phone line to request guest speakers from IBM for special meetings.*

For more information about participating in the IBM User Group Support program, please write to: IBM User Group Support, IBM Corporation 2900, P.O. Box 3022, Boca Raton, FL 33432.

*The availability and frequency of guest speakers depend on the size of the group, its location, and meeting night.

HARDCOPY

Hidden talent. Think of the many entertaining and useful programming ideas that must exist out there but never find their way to market.

The IBM *Directory* of Personally Developed Software gives you direct access to some of that hidden talent. It's a catalog of new programs developed by individuals for the IBM Personal Computer Family.

The best news is the prices. Programs listed in the *Directory* sell for as little as $14.95. They cover a wide range of interests, from entertainment and education to personal productivity and business applications.

The Directory of Personally Developed Software from IBM

Each program in the *Directory* has a full description that includes system requirements and illustrations or color photos of representative screens. Programs may be ordered by mail or through an 800 telephone number.

To subscribe to the *Directory* call 800-IBM-PCSW.

IBM®

TIPS AND TECHNIQUES

Added color. Bored with the black screen that appears on your IBM PC Color Display when you boot up your system? There are lots of other color possibilities, and the brief program below shows you how to set them from DOS.

It will give you a display with a black border around a rectangle 80 columns wide and 25 lines high. The program can be used in an AUTOEXEC.BAT file to produce a starting color, and DEBUG will maintain the color you set.

All you have to do is substitute number or letter values for the colors you want where the ?? appear in the following program. For the first ?, substitute one digit (0-7) for the background color. For the second ?, substitute either a digit or a letter for the foreground color (1-7 for regular colors, 9-F for intensified colors). For example, 28 will give you grey text on a green background. For a complete listing of the color codes, see the Color Statement section of your IBM BASIC manual.

To set your screen colors, do the following from the DOS prompt:

```
A>debug color.com
File not found (ignore this message)
-rcx
:20
-e 100 2b c0 1e 50 b8 03 00 cd 10 b8
00 06 b9 00 00 ba
-e 110 50 20 b7 ?? cd 10 b4 02 ba 00
00 b7 00 cd 10 cb
-w
writing 20 bytes
-q
```

Thereafter, you need only type "color" at the initial DOS prompt after booting your system to change the display from black and white to your preset colors.

For more information about IBM Personal Computer products discussed in this issue of *Read Only*, see your authorized IBM Personal Computer dealer or IBM Product Center. To learn where, call 800-447-4700. In Alaska and Hawaii, 800-447-0890.

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Little Tramp character licensed by Bubbles Inc., s.a.

Choosing and Using
Tax Software
Packages

Carol A. Crowell

Tax Software In Brief

Record Keeping

Auto Tax Saver

The first software program designed to monitor the business use of cars under the Tax Reform Act of 1984, *Auto Tax Saver* documents business car usage for salespeople and professionals who deduct expenses for investment tax credit. Adaptive Software says the mileage log provides all necessary documentation required by the IRS. It accumulates mileage, monitors percentages, records trip purposes, and recognizes repeated patterns of places visited. In the case of multiple trips to the same location, data entry is accomplished by pointing to a destination and hitting the return key.

Systems: 192K IBM PC, MS-DOS
Price: $89.95
Manufacturer:
Adaptive Software
1868 Cavell Ave.
Highland Park, IL 60035
(312) 831-4420

BIN

Designed to organize personal and small business income tax data into separate categories, *BIN* is a record keeping program for people who keep their receipts, check stubs, W-2's, bank statements, credit card records, and medical bills in shoeboxes. The category "bins" appear at the top of the screen with tags such as Medical Expenses, Travel, Phone, and Taxes and are selected with a single keystroke. Data from receipts are entered in the bin and then automatically totaled and alphabetized. Superflight says records can be maintained on a periodic basis or compiled in one shot on April 14. The actual filling out of the return is left to the user.

System: 64K IBM PC, MS-DOS
Price: $30
Manufacturer:
Superflight, Inc.
752 La Para Ave.
Palo Alto, CA 99306
(415) 493-5050

MoneyTrack

Designed for the non-accountant and novice computer user, *MoneyTrack* is a record keeper geared for people with small businesses using an outside bookkeeping service, principals of a company or firm that acts as a trustee for multiple bank accounts, and people with a variety of business activities. *MoneyTrack* records simple expense payments and complex financial transactions, files these transactions throughout the year with no month-end accumulated totals, and produces a variety of reports for the user and his accountant. Each transaction is related to a fund, business, account, or special ledger, with up to 99 funds, 99 businesses, 900 accounts, and 900 special ledgers provided. At the end of the year, *MoneyTrack* provides a summary for each category and then forwards balances and monthly totals for month-by-month comparison of the new year with the old. *MoneyTrack* also interfaces with *Lotus 1-2-3* for custom reports.

System: 128K IBM PC, MS-DOS
Price: $295
Manufacturer:
Pacific Data Systems, Inc.
6090 Sepulveda Blvd.
Culver City, CA 90230
(213) 559-8713
(800) 343-9194
(800) 421-4706

Tax Record

With Cheapware *Tax Record*, income and expense records for any calendar year can be collected in one convenient, displayable file. Entries are categorized in any of eight different classes and 32 different types. At income tax time, the program will print out the entire ledger, the ledger for any single month, all ledger entries in any single type, or all ledger entries in any single class with summary totals for each of the 32 types. For example, in a class of deductible expenses, one type could be medical with accumulative totals for physicians' receipts, hosptial bills, dental statements, and prescription receipts. Any entry to the program may be updated, changed, modified, or deleted from the file or to another file. The program can also establish personal, business, and landlord-type ledgers.

System: IBM PC, MS-DOS
Price: $22.50
Manufacturer:
Robert L. Nicolai
4038 N. Ninth St.
St. Louis, MO 63147
(314) 621-7618

Tax Planning

Beacon

A tax planner that combines tax record keeping with personal financial management, *Beacon* tracks both income and non-income producing assets and keeps a running record of the net worth of one owner or any group of owners. The net worth of the entire family, the husband and wife only, the children only, and family trust, or an IRA owner, is instantly available. All bookkeeping adjustments for investment portfolios and cash accounts are made automatically and produce tax information. The program prints a summary tax return and can be modified to allow "what if" analysis. Tax tables and limits-percentages in the tax code can be edited to keep

them current. The program includes a reminder system for special events, such as dividend dates, stockholder meetings, maturity dates, option expiration dates, and other mundane but important bits of information such as a spouse's birthday or wedding anniversary.

System: 48K Apple II and III
Price: $90
Manufacturer:
The Cumberland Company
4765 North Cumberland Blvd.
Milwaukee, WI 53211
(414) 964-7877

Estate Tax Planner

Designed for CPAs and attorneys, *Estate Tax Planner* analyzes up to four alternative plans simultaneously to aid decisions about asset distribution. Eight different analyses can be made: estate tax liability, gross estate, present value analysis, deferred payment under IRC section 6166, section 6166 payment schedule, liquidity analysis, IRS section 303 stock redemption, and marital deduction funding. *Estate Tax Planner* requires little computer expertise for operation.

System: IBM PC, MS-DOS, Apple II and III, CP/M
Price: $750
Manufacturer:
Aardvark/McGraw-Hill
1020 North Broadway
Milwaukee, WI 53202
(414) 225-7500

Financier Tax Series

This tax planning package operates like a spreadsheet, forming rows and columns to create multiple tax cases and calculate tax years 1984 and after. The program offers graphic analysis, on-screen help, a depreciation module, and CPI indexing. Information stored within can be downloaded to *Financier II*, a full-featured business finance program from the same company.

System: IBM PC, MS-DOS
Price: $175
Manufacturer:
Financier
2000 West Park Dr.
Westboro, MA 01581
(617) 366-0950

Forecast

A tax estimating and "what if" tax planning program, *Forecast* automatically calculates dividends and interest, capital gains and losses, taxable social security income, married couple deductions, self-employment taxes, alternative minimum tax, tax credits, and income averaging. It displays a worksheet with an overview of the user's entire tax situation with an estimate of year-end taxes. Up to five different tax scenarios can be viewed simultaneously, and updates can be made as changes occur. Based upon this year's tax information, *Forecast* also can project tax scenarios for the next four years.

System: IBM PC, MS-DOS, 64K Apple II with 80-column card, 128K Macintosh
Price: IBM PC, $179.95; Macintosh, $69.95; Apple II, $59.95
Manufacturer:
G & G Software, Inc.
610 Park Blvd.
Austin, TX 78751
(512) 458-5760

Professional Tax Planner

An updated, year-round tax planning program, *Professional Tax Planner*, version 4.0, has automatic calculation of the two-earner deduction, an alternative minimum tax break-even point calculation, and the ability to save results to a DOS file to be used with a word processing program. This enhanced version also

Common Tax Forms

Form 1040	Standard income tax form we all know and love.
Form 1040A	Variation of standard form.
Form 1040-ES	Estimated tax.
Form 1040EZ	Another variation of the standard form, sometimes referred to as the short form.
Form 1040PR	Form for residents of Puerto Rico.
Form 1040SS	Form for residents of Guam, American Samoa, Virgin Islands, and Northern Marianas Islands.
Form 1040X	Amended income tax return.
Form 1065	US partnership return of income.
Form 1120	Corporation income tax form.
Form 1120S	S corporation income tax form.
Form 2106	Employee business expenses.
Form 2119	Sale or exchange of principal residence.
Form 2210	Underpayment of estimated taxes by individuals.
Form 2441	Credit for child and dependent care expenses.
Form 3468	Investment credit.
Form 3903	Moving expenses adjustment.
Form 4137	Computation of Social Security tax on unreported tip income.
Form 4255	Recapture of investment credit.
Form 4562	Depreciation and amortization.
Form 4684	Casualties and thefts.
Form 4797	Supplemental schedule of gains and losses.
Form 5695	Residential energy credit.
Form 5884	Targeted jobs credit.
Form 6251	Alternative minimum tax computation.
Form 6765	Research credit.
Schedule A	Itemized deductions.
Schedule B	Interest and dividend income.
Schedule C	Business profit or (loss).
Schedule D	Capital gains and losses.
Schedule E	Supplemental income schedule.
Schedule G	Income averaging.
Schedule K	Shareholders' share of income, credits, and deductions.
Schedule L	Balance sheets.
Schedule R	Credit for the elderly.
Schedule RP	Credit for the elderly.
Schedule SE	Social Security self-employment tax.
Schedule W	Deduction for a married couple when both work.

Can You Deduct Your Computer?

The Deficit Reduction Act of 1984 (DRA) limits the tax benefits of using a personal computer in the home. The new rules are generally applicable only to property placed in service after June 18, 1984 and affect only "home" computers as they do not apply to equipment used exclusively at a regular business establishment. Although many home uses of a personal computer can still provide deductions, the new rules severely restrict tax benefits for most employees who use their computers at home in job-related activities.

Accelerated depreciation under ACRS, Investment Tax Credits (ITC), and the election to deduct the first $5000 of the cost of a computer in the year of purchase (expensing) are now available only for computers used more than 50% in a trade or business. Straight-line depreciation over a 12-year period is the only deduction available if business use is 50% or less of the total computer use. In addition, the deduction in the first year is limited to one-half of one-twelfth of the cost.

In meeting the 50% test, investment-related computing will not count as business use even though these activities are eligible for a deduction. As under earlier law, when usage is less than 100% business, an allocation of costs between business and nonbusiness usage is required in calculating the deduction.

The DRA requires reporting of previous deductions as income if business use of the computer falls below 50% in subsequent years.

For example, if a computer is used only for business in the first year, but in a later year is used mostly for personal purposes, depreciation must be calculated using the 12-year straight-line method. But the taxpayer is also required to include in current year's income the excess of ACRS depreciation taken (and any amounts expensed) in prior years over what he would have been allowed using straight-line in those years. The ITC is similarly subject to a partial "recapture."

Use of a home computer in an employee's job qualifies for business use only if the computer is used for the "convenience of the employer" and is "required as a condition of employment."

These requirements mean that there must be an excellent *business* reason why the employee must work at home (e.g., insufficient office space at the regular place of employment) and that the employer requires work at home as a condition of employment. The taxpayer will need a written statement from the employer in support of the second condition (but the statement by itself is not sufficient). The intent of Congress was to restrict deductions of home computers by employees, and it appears, in fact, that very few such users will now qualify.

New rules require records indicating business purpose, type of work, and the date and time of computer use. Absence of these records will probably result in loss of the deductions.

A simple log or diary should be used to record each use of the home computer. It should be "contemporaneous" (i.e., prepared at the time each use occurs) and include all the information required to justify the deduction.

The law changes noted here suggest that the most favorable tax benefits (including the ITC, ACRS depreciation, and the expensing election) will usually be available only to self-employed individuals who have a primary or secondary business in their home and to employees required to use a home computer in their jobs as a conditon of employment. In both situations, business use must be more than 50% of total use of the machine.

The new law does *not* apply to computers used at a regular business establishment. For this purpose, a "home office" (in the technical IRS sense) qualifies as a regular business establishment. Note, however, that the home office must be used exclusively for business purposes, and that the home computer must be used exclusively in the home office. If this "regular business establishment" exception is not met, the taxpayer should try to ensure that business use is always greater than 50% of total use.

allows users to enter and calculate state taxes. *Professional Tax Planner* details tax items for adjustments to income and calculates investment expense limitations and 10-year averaging. According to a maintenance agreement, enhancements and updates within 30 days every time tax laws change cost $100 in addition to the retail price for the first year. The agreement may be extended for subsequent years at variable costs, depending upon the complexity of tax law changes, with a $225 ceiling. *Professional Tax Planner* can be used by computer novices, although it is designed for CPAs and others already familiar with tax planning.

System: 256K IBM PC, MS-DOS, Apple II
Price: $395
Updates: Provided within 30 days of any tax law change. $100 for first year
Manufacturer:

Aardvark/McGraw-Hill
1020 North Broadway
Milwaukee, WI 53202
(414) 225-7500

Tax Decisions

Tax Decisions, a 1040 based tax planning package for professional tax planners and financial advisors, provides for graphic reports, tabular reports, client filing, automatic calculations, and a permanent record of up to five tax scenarios for each client. Related items may be recalculated with a single new entry change, and related schedules will be considered automatically through the "expert system" advising technique. In both report and graph forms, key lines of Form 1040 can be displayed to demonstrate tax liability in a single plan compared to other plans and options. In addition, the calc pad, which enables the user to calculate independently of the program, can be displayed through on-screen windowing along with the appropriate form or schedule. As a bonus, *Tax Decisions* includes a subscription to Compuserve's IRS information database.

System: IBM PC, MS-DOS
Price: $279
Updates: Semi-annual; first year's update free, with subsequent ones at annual subscription rate of $99.
Manufacturer:

Eagle Software Publishing, Inc.
993 Old Eagle School Rd.
Wayne, PA 19087
(215) 964-8660

Tax Mini-Miser

Designed by financial planners and investment counselors for professional tax planning and home use, *Tax Mini-Miser* has its own run-time system, which making it easy for first time computer users to operate. The program employs a spreadsheet-like format in which one screen is used for income entries and another for deduction entries. *Tax Mini-Miser* can project tax scenarios for up to six years, perform up to six alternative scenarios simultaneously, and calculate income averaging and alternative minimum tax. The most recent federal tax laws are applied. A California version of *Tax Mini-Miser* is available with other state programs planned.

System: Apple II and III, IBM PC
Price: $295
Updates: Annual; $45 - $75
Manufacturer:
Sunrise Software
36 Palm Ct.
Menlo Park, CA 94025
(415) 441-2351

Tax Shelter/Investment Planner

Tailored for CPAs and financial planners, *Tax Shelter/Investment Planner* analyzes the effects of tax shelters and investments; figures net present value, rates of return, cumulative tax benefits, and effect upon cash flow; and prints reports for clients. Three complete reports are offered: Investment Report, Integrated Investment Report, and Tax Report. Calculations can be made with post-1975 investment interest limitations, the alternative minimum tax, and general business credit limitations.

System: 256K IBM PC
Price: $395
Manufacturer:
Aardvark/McGraw-Hill
1020 N. Broadway
Milwaukee, WI 53202
(414) 225-7500

Tax Strategist

An income tax planning program that projects tax liability for 10 years or considers different alternatives for a single year, the *Tax Strategist* automatically selects the optimum tax method for the individual. A key feature is the planning program that calculates federal income tax obligations and compares regular tax as determined from standard tables with income averaging and alternative minimum tax for extended periods. The program also determines the amount of tax shelter loss needed to achieve particular tax reduction goal.

System: IBM PC, MS-DOS
Price: $295
Manufacturer:
Quadram Corporation
4355 International Blvd.
Norcross, GA 30093
(404) 923-6666

Tax Planning and Preparation

Bottomline Tax

Devised as a management tool for lay people and professional preparers, *Bottomline Tax* is a planning and preparation program that can be used to train or update individuals in federal income tax requirements. Tax returns can be prepared by correlating the information from various schedules or in a batch mode in which the data are entered and the computer calculates the tax, prints the tax return, and automatically posts the data to the correct schedules. Menu-driven with 12 categories that prompt the user for data entry, the program can create a new tax record, copy an existing record for modification, or call up a record for analysis of financial decisions. A forecasting capability allows the user to minimize future tax liability. A tutorial, which provides examples, specific summaries, and tax planning suggestions, is included.

> **The income tax has made more liars out of the American people than golf has.**
> **—Will Rogers**

Forms: A, B, C, D, E, F, G, SE, W, R, R&P, 1040
System: IBM PC, MS-DOS, CP/M, Apple IIe, Tandy Model III,4
Price: $295
Manufacturer:
Venture Software
16200 Ventura Blvd.
Encino, CA 91436
(818) 986-4110

Income Tax Spreadsheet

The BNA *Income Tax Spreadsheet* is specifically designed for professional tax planners involved in tax planning and tax compliance work, including CPAs, tax attorneys, financial planners, public accountants, commercial tax preparers, and IRS agents. Using an electronic spreadsheet format, it automatically calculates tax liability over a seven-year period for all categories of individuals and fiduciaries. It includes income averaging, alternative minimum tax, and automatic indexing. Multiple year or multiple projections can be performed simultaneously. Help messages display reference to IRS codes.

System: 192K IBM PC, MS-DOS
Price: $495
Manufacturer:
BNA Software
1231 25th St.
Washington, DC 20037
(202) 452-4453

J. K. Lasser's Your Income Tax

This comprehensive tax planning and preparation software supplements the famous tax guides from the Lasser Tax Institute. The program opens with a questionnaire to determine which forms and schedules must be filled out and then replicates the appropriate forms on the screen. On-screen help is cross-referenced to paragraphs in the tax guide. Windowing techniques provide instant access between forms. Automatic saving of information and a four-function calculator are part of the program. A copy of J. K. Lasser's *Your Income Tax* is included.

A companion program, *J. K. Lasser's Your Money Manager*, is a tax record keeping program. Expenses and other financial information stored over the course of a year can be downloaded into the tax program

Forms: A, B, C, D, E, F, G, SE, W, R, 1040, 2106, 2119, 2210, 2441, 3468, 3903, 4562, 4625, 4684, 4797, 5695, 6251
System: IBM PC, MS-DOS
Price: Your Income Tax, $79.95; Your Money Manager, $89.95
Manufacturer:
Simon & Schuster
1230 Avenue of the Americas
New York, NY 10020
(212) 245-6400

PC/Taxcut

Incorporating both tax planning and preparation, *PC/Taxcut* tax planner

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CIRCLE 159 ON READER SERVICE CARD

calculates and prints 21 tax forms and schedules, producing a complete tax return, ready to sign and file. It features the ability to produce a variety of reports, automatic limitations on IRAs, handling of depreciation, separation of tax items, optional state sales tax table, and support for PC-DOS pathnames. The program calculates the alternative minimum tax, rents and royalties, business expenses, energy credit, rollover of gain on the sale of residence, capital loss carry-forward, dual-earner deduction, and all-savers certificate interest exclusion. Newly updated for 1984/1985, it is suitable for year-round tax planning.

Forms: W, A, B, C, D, E, F, G, SE, 1040, 2106, 2119, 2210, 2441, 3468, 3903, 4562, 4797, 4952, 5695, 6251
System: 128K IBM PC, MS-DOS
Price: $195
Manufacturer:
Best Programs, Inc.
5134 Leesbury Pike
Alexandria, VA 22302
(703) 931-1300
(800) 368-2405

Personal Planner

Designed to calculate personal tax liabilities for 1983 through 1986, *Personal Planner* by CPAids combines calculation of income tax liabilities with investment and financial planning. To help consumers minimize income tax liability, the program projects income into the future and shows the long-term implications of current financial decisions. Storing up to four different sets of assumptions about an individual's financial status, the program prints out two reports: one showing the comparison between years and one showing the comparison between the different options. Forms include 1040 cross-referencing, itemized deductions, interest/dividends, capital gains, income averaging, self-employment, joint filing status, 4972, special 10-year averaging, and 6251 alternative minimum tax.

Forms: A, B, C, D, G, SE, W, 1040, 4972, 6251
System: Apple II, IBM PC, DEC Rainbow, CP/M
Price: $49
Manufacturer:
CPAids, Inc.
1061 Fraternity Circle
Kent, OH 44240
(216) 678-9015

Personal Tax Planner

A tax planning and preparation template for *Lotus 1-2-3* and *Symphony*, the *Personal Tax Planner* includes federal forms which are updated twice annually, in September for latest law changes in year-end planning and in January for conversion to new tax forms. Also available are state tax forms by region—states are grouped into Eastern, Central, and Western. To explore various tax possibilities, the program automatically recalculates data to perform a running series of "what ifs." Macros and help are included on the disk, and functions have been subdivided into six separate menus.

Forms: A, B, C, D, E, G, SE, W, 1040, 2106, 2441, 3468, 4562, 6251
System: *Lotus 1-2-3* (256K), *Lotus Symphony* (512K)
Price: $75
Updates: With September version, the January version is at "reproduction and distribution cost." Annual updates at 60% of retail
Manufacturer:
Permar & Associates
1125 Sunnyhills Rd.
Oakland, CA 94610
(800) 443-0100

Employees make the best dates. You don't have to pick them up and they're always tax deductible.

—Andy Warhol

Quick-Look Tax Planner

For accountants, this recently updated planning program can project 1984 and 1985 tax liabilities and print reports for investment interest expense deduction, special 10-year averaging method, income averaging, and alternative minimum tax. In addition, it applies an index of 1.0425 per code section 1(f) to the 1985 tax rates, tax tables, exemptions, and zero bracket amount. *Quick-Look* also provides mandatory itemizers, a limit for general business credit, and an automatic computation of taxable amounts of unemployment compensation and Social Security received.

Forms: G, W, SE, 1040, 4952, 4972, 6251
System: IBM PC
Price: $495
Manufacturer:
Management Control Systems
230 Peachtree St., NW
Atlanta, GA 30042
(404) 522-2383

TaxCalc Tax Planner

A tax planning template for a variety of popular spreadsheets, including *Lotus 1-2-3, Symphony, Framework, VisiCalc, SuperCalc, Multiplan* and *Report Manager*, the *TaxCalc Tax Planner* works out local and national returns simultaneously. Using the on-screen information form, the program calculates data by line number for Form 1040, Schedules D and G, Form 4972 with 10-year averaging provision, and alternative minimum tax. Local templates, which follow appropriate state or city forms, are available for Arizona, California, Illinois, Ohio, Oregon, Minnesota, New York, and New York City. *TaxCalc Tax Planner* features the ability to scroll the screen and review an addition to the input without searching for categories, the use of a spreadsheet window to watch the effect of "what ifs," and graphic capabilities with *Lotus 1-2-3, SuperCalc 3* and *VisiCalc IV*.

Forms: D, G, 1040, 4972
System: 128K IBM PC, MS-DOS, Apple, Tandy, CP/M, CP/M-86
Price: $150; state templates $50 each, except CA, NY, and NYC, $100
Manufacturer:
TaxCalc Software, Inc.
4200 South Hulen
Fort Worth, TX 76109
(817) 732-7307

Tax Command Planner

Designed for end-of-year tax planning, *Tax Command Planner* simultaneously explores six different strategies for periods of up to five years to compare taxes from year to year. The program shows methods of depreciating equipment, whether to sell stock, and how to make contributions at the lowest cost. Any input number can be changed and recalculations are automatic. The user can enter data manually or use a return prepared by *Tax Command*, a sister program for tax preparation. *Tax Command* is a simple computation program geared for casual and novice computer

What made over 100,000 Apple II owners fall in love with System Saver?

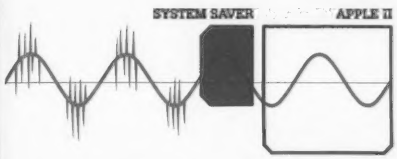
It's the most versatile, most convenient, most useful peripheral ever made for the Apple.®

System Saver® filters out damaging AC line noise and power surges.

70-90% of all microcomputer malfunctions can be traced to power line problems.* Problems your System Saver guards against.

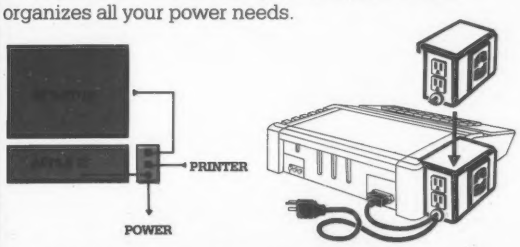
Power line noise can often be interpreted as data. This confuses your computer and produces system errors. Power surges and spikes can cause severe damage to your Apple's delicate circuitry and lead to costly servicing.

System Saver clips surges and spikes at a 130 Volts RMS/175 Volts dc level. A PI type filter attenuates common and transverse mode noise by a minimum of 30 dB from 600 kHz to 20 mHz with a maximum attenuation of 50 dB. You end up with an Apple that's more accurate, more efficient and more reliable.



System Saver makes your Apple more convenient to use.

No more reaching around to the back of your Apple to turn it on. No more fumbling for outlets and cords to plug in your monitor and printer. System Saver organizes all your power needs.

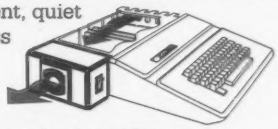


It functions as a multi-outlet power strip with two switched outlets. Plus System Saver offers the ultimate convenience; a front mounted power switch for fingertip control of your entire system.

System Saver lets your Apple keep its cool.

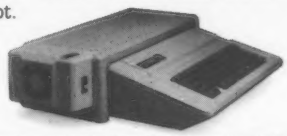
Today's advanced peripheral cards generate heat. In addition, the cards block any natural air flow through the Apple IIe creating high temperature conditions that shorten the life of the Apple and peripheral cards.

System Saver's efficient, quiet fan draws fresh air across the mother board, over the power supply and out the side ventilation slots. It leaves your Apple cool, calm and running at top speed.



So if you want to keep damaging heat, line noise and power surges out of your system for good, pick up the only peripheral that's in use every second your computer is in use. The System Saver. You'll soon come to think of it as the piece Apple forgot.

Compatible with Apple stand



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New York State residents add applicable sales tax.

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Name on Card

Name

Address (UPS delivery)

City State Zip Phone

251 Park Avenue South
New York, NY 10010
(212) 475-5200 Tlx: 467383 KML NY

KENSINGTON™ MICROWARE

*PC Magazine: March 1983.

System Saver is UL Listed. System Saver's surge suppression circuitry conforms to IEEE specification 507 1980, Category A. Available in 220/240 Volts, 50/60 Hz.

System Saver is a registered trademark of Kensington Microware Ltd.
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CIRCLE 134 ON READER SERVICE CARD

Software Loophole

Certified Public Accountant Robert W. McGee of Dumont, NJ recently won the Golden Loophole Award from *CPA Digest* Newsletter for discovering a way for companies to save money on taxes when buying software.

It seems most states consider computer software on tape or disk to be tangible personal property, subject to state sales or use tax. If the same software is delivered through a modem connected to a computer, some states consider it intangible property, which is not subject to taxation.

The dollar savings can be substantial for mainframe and minicomputer software, and microcomputer owners can benefit too. However, *CPA Digest* cautions you to check state law carefully in advance. This loophole may not apply in your state.

CPA Digest, 1109 N. Mayfair Rd., Milwaukee, WI 53226. (414) 259-9300.

On-Line Tax News

NewsNet, a telecommunication service featuring on-line versions of over 200 special interest newsletters, offers several electronic newsletters dealing with taxes.

Commerce Clearing House Tax Day provides daily developments on Federal tax subjects. A sister newsletter, State Tax Week, covers state tax news.

Charitable Giving covers gifts to charities.

Corporate Acquisitions and Dispositions reports on the tax aspects of buying and selling businesses.

Employee Retirement Plans explains the tax laws surrounding retirement and pension plans.

IRS Practices and Procedures looks at the latest policy developments of our tax collection agency.

The Small Business Tax Review covers tax news affecting small businesses.

Tax Notes Today provides daily coverage of Federal tax developments.

NewsNet, 945 Haverford Rd., Bryn Mawr, PA 19010. (215) 527-8030, (800) 345-1301.

users to be used at home or professionally. In addition, Practical Programs offers *Tax Command Professional* with the added ability to print on forms using overlays. Both preparation programs perform income averaging, calculate capital gains, and use current tax tables.

Forms: A, D, G, 1040
System: Tax Command Planner and Tax Command Professional, IBM PC, MS-DOS, Apple II, and C64; Tax Command C64, Atari, and TRS-80 Color Computer
Price: Tax Command, $24.95; Tax Command Planner and Tax Command Professional: IBM PC, $99.95; Apple II, $79.95; C64, $49.95.
Manufacturer:
Practical Programs, Inc.
P.O. Box 93104
Milwaukee, WI 53203
(414) 278-0829

Tax Computation

Developed by a professional accountant, *Tax Computation* is a tax preparation program that simulates an interview with a tax accountant. Thus, users do not have to know in advance which deductions they want and are qualified for. For example, the program may determine that a user is eligible for deductions for moving, earned income credit, babysitting, employee expenses, or self-employment earnings not taxed by Social Security. The $29.95 version includes nine forms in detail, while the professional version has 16 forms. Both versions have built-in calculators and will print IRS acceptable forms on a Commodore printer. The forms also appear on the screen so users can copy data to the appropriate forms.

Forms: A, B, C, G, R, SE, W, 1040, 2210; Pro version adds D, 2106, 2119, 2441, 3903, 4562, 6251
System: C64; disk drive; printer.
Price: $29.95; Pro version, $95
Updates: Annual; $15; pro version, $75
Manufacturer:
K. R. Rullman Company
4550 SW Murray, #81
Beaverton, OR 97005
(503) 641-4610

TaxMode

An easy to use tax planning program, *TaxMode* is tailored for people who earn a diversified and changing income and want to project and analyze the effects of investments on their taxes. The program calculates federal personal income taxes and allows for income averaging, working couple deductions, capital gains, Social Security taxes, itemized deductions, alternative minimum tax, and tax credits. Although Schedule C form for income and expenses from a sole proprietorship is not included, *TaxMode* does provide a category for business income and investment credit. The program also has an inflation index, a Scratch Pad Calculator, and a user's manual with clear and thorough instructions.

Forms: A, D, E, G, SE, W, 1040, 1951, 1972, 6251
System: 128K IBM PC, MS-DOS, 48K Apple II; 64K CP/M systems
Price: $295
Manufacturer:
Sawhney Software
888 7th Ave.
New York, NY 10106
(212) 541-8020

Tax Planner

A comprehensive, stand-alone program *Tax Planner* provides "what if" tax planning applications and allows the interfacing of tax planning with actual tax preparation. Designed for professional tax preparers, the program can compare alternate years or multiple assumptions per year. Tax tables are defined for four years, and four different assumptions can be compared on a yearly basis. Featuring a built-in calculator, the planner computes Schedule G, 4972 and 6251, with supplemental calculations for Schedule 2119, investment interest computation, and charitable contribution limits. A partnership input module is provided for developing effective tax strategies and financial forecasting. Professional printouts provide summary analysis and columnar comparisons.

System: IBM PC, MS-DOS, and CP/M
Price: $300
Manufacturer:
CPAids, Inc.
1061 Fraternity Circle
Kent, OH 44240
(216) 678-9015

Tax-Prep

A personal income tax template for both *Lotus 1-2-3* and *Multiplan* spreadsheets, *Tax-Prep* is a combination tax planning and preparation program that offers professional tax consultants and CPAs a wide range of options, including

10 Reasons Why Your Business Needs Consolink's MicroSpooler.™

1 MicroSpooler™ from Consolink Saves Time.

Time is money. When your computer is printing, plotting or communicating, you're waiting because your printer prints at a much slower rate than the computer thinks.

2 MicroSpooler Eliminates the Waiting.

Accepts data quickly from your computer, stores it until the printer, plotter or modem is ready, and then relays it at the fastest pace those devices will accept. Your computer is back on the job in seconds — not minutes or hours — computing.

3 MicroSpooler Means Communications Economy.

Accepts data from your modem at high transmission rates for later viewing and printing. Gets you on and off the database quickly.

4 MicroSpooler Fits Every Business Effort.

Two MicroSpooler models, (64K and 128K) are available to supply the needs of correspondence level or high-volume information processing.

5 MicroSpooler Installs Easily Between Computer and Peripherals.

Stands alone between your computer and your peripherals. Installs quickly with two simple cable connections — Centronics-compatible parallel or RS-232C serial.

6 MicroSpooler Has its Own Power Supply, is Easy to Operate.

It's "system-independent", and easily transferred from one peripheral device to the next with no waiting. Your CPU is free to access seconds after giving the print, plot or communicate command. Controls are simple — a "Copy/Pause" button allows you to interrupt and resume operations at a touch. A "Reset" button lets you clear the buffer memory.

7 MicroSpooler is Easy to Understand.

The easy-to-read digital display continually updates the amount of memory in use, (or the number of remaining copies to print). And you can print or transmit up to 99 duplicate copies on the 64K MicroSpooler — 256 copies on the 128K model — with one initial command.

8 MicroSpooler Won't Take Up Your Space or Your Time.

Models are book size, uncomplicated units that can be placed out of the way on shelves or CPU cabinets. Two cables connect it to your computer and your peripheral device.

9 MicroSpooler Quality Means it's Cost-efficient.

Consolink builds the MicroSpooler to last and to sell inexpensively. That spells computing efficiency.

10 Consolink Makes the Difference.

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*60 lines per printed page, random line lengths, 40 char/line. Assumes CPU can output text at a maximum of 5,800 char/sec. with 64K buffer.

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multiple form selection, client letter templates, transparent overlay forms, and automatic data transfer among 22 IRS schedules and forms. The program also can be linked to other spreadsheet templates such as checkbook, ledger, and expense records, and includes cross-check analysis to verify consistency between forms and records. It calculates income averaging and alternative minimum tax, and automatically selects the mode for lowest tax liability. As a tax planning aid, the program evaluates the effects of a tax shelter compared to a capital gain or loss, and allows the substitution of data to provide "what if" strategies. With fully accessible programming, the software can be customized by the user for particular applications.

Forms: A, B, C, D, E, F, G, R, SE, W, 1040, 2106, 2119, 2210, 2441, 3468, 3903, 4562, 4684, 4797, 5695, 6251
System: IBM PC, MS-DOS, TRS-DOS, CP/M, Apple II, and Macintosh
Price: $129.95
Manufacturer:
EZ Ware Corporation
17 Bryn Mawr Ave.
Bala Cynwyd, PA 19004
(215) 667-4064

Tax Preparer

The *Tax Preparer* is a tax preparation and planning program that stores records of expenses, deductions and memos throughout the year, plans for next year with built-in projections to 1990, calculates current tax, and prints completed forms. Menu-driven with on-screen forms and a visible calculator, the program is designed to catch most common errors with automatic corrections and will sound a warning if the user tries to fill out a form for which he does not qualify. For the professional tax preparer, the program offers highspeed data entry, batch processing, batch printing, disk client catalogs, client pro-forma organizers, and automatic billing letters. In addition to instructions on how to run the software, the manual provides line by line detail for each IRS form and schedule, explains the newest tax law changes, and acts as a concise course in tax preparation.

Forms: A, B, C, D, E, F, G, R, SE, W, 1040, 2106, 2119, 2210, 2441, 3468, 3903, 4562, 4797, 5695, 6251
System: IBM PC, MS-DOS, Apple II
Price: Apple II, $250; IBM, $295
Updates: Annual; approximately $100
Manufacturer:
HowardSoft
8008 Girard Ave., Suite 310
La Jolla, CA 92037
(619) 454-0121

Tax Preparer, Tax Planner

Created for the accountant and professional tax practitioner, the *Tax Preparer* package offers a federal program, an integrated state program, and a proforma application system. The programs offer several printing alternatives including plain paper with overlays, batch processing using preprinted continuous forms, and computer generated forms when applicable. The company also provides customized interview sheets for clients to supply tax information. *Tax Planner* interacts with state tax calculations for one-year projections and for developing tax strategy. State programs are available for New York, New Jersey, Massachusetts, and Connecticut, with the company offering to write other state programs upon order.

Forms: A, B, C, D, E, F, G, R&RP, SE, W, 1040, 2106, 2119, 2210, 2440, 2441, 3468, 3903, 4136, 4255, 4562, 4797, 4952, 4972, 5695, 5884, 6251, 6252, 6765
System: MS-DOS and CP/M
Price: Preparer, $750; State, $150; Planner, $200
Updates: Annual
Manufacturer:
Pencil Pushers United, Inc.
25 S. Greeley Ave.
Chappaqua, NY 10514
(914) 238-9600

Tax Projection and Preparation Multi Pak

A collection of five applications programs that run with *Lotus 1-2-3*, the *Tax Projection and Preparation Multi Pak* is a comprehensive financial planning program combined with tax assistance and preparation. The five applications are personal income tax, personal budgeting, investment management, employee business expense, and credit card report. Presenting an on-screen facsimile of the tax form, the personal income tax module organizes tax preparation, performs all calculations, and automatically completes the 1040 form. The program features a quick tax and a full tax option, which allows either an immediate tax profile or an in-depth tax status to be generated based upon options built into the program. The other four applications in the collection are designed to organize the data necessary to file broad spectrum tax returns.

Forms: A, B, C, D, E, F, G, SE, W, 1040
System: IBM PC, MS-DOS
Price: Multi Pak, $395; Personal Income Tax Module purchased individually, $99.95
Updates: Annual
Manufacturer:
OptionWare Incorporated
Corporate Place
Four Barnard Lane
Bloomfield, CT 06002
(203) 243-2355

Tax Relief I, Tax Relief II

Micro Vision offers *Tax Relief I* for personal planning and preparation and *Tax Relief II*, with extended capabilities, for professionals. Both programs are menu-driven and automatically calculate alternative minimum tax, income averaging, self-employment tax, and deduction for married couples. Both include a depreciation module, line for line explanations of data entry sheets for year-round record keeping, and automatic re-calculations of the net effects of last-minute data changes. In addition to the computer generated substitute forms in IRS approved format that is printed by *Tax Relief I, Tax Relief II* also has batch printing and transparent overlays.

Forms: A, B, C, D, E, G, R, W, SE, 1040, 2106, 2441, 3468, 4562, 5965, 6251
System: IBM PC, MS-DOS
Price: Tax Relief I, $149; Tax Relief II, $399
Updates: Annual for both at 40% of retail price.
Manufacturer:
Micro Vision
145 Wicks Rd.
Commack, NY 11725
(516) 499-4010

Tax Vision

Combining a spreadsheet and tax preparation and planning program, *TaxVision* features an integrated set of templates of IRS forms and schedules that runs with *Multiplan. Taxvision* automatically transfers data entered to appropriate forms, recalculates tax based upon last-minute modifications, explores "what if" scenarios, and displays calculations and results. Users can create their own templates for check register, family budget, or ledger to record data year round and can manually prepare any forms or schedules not provided. Each template can be printed in

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West Coast Travel offers travel information for the western states.

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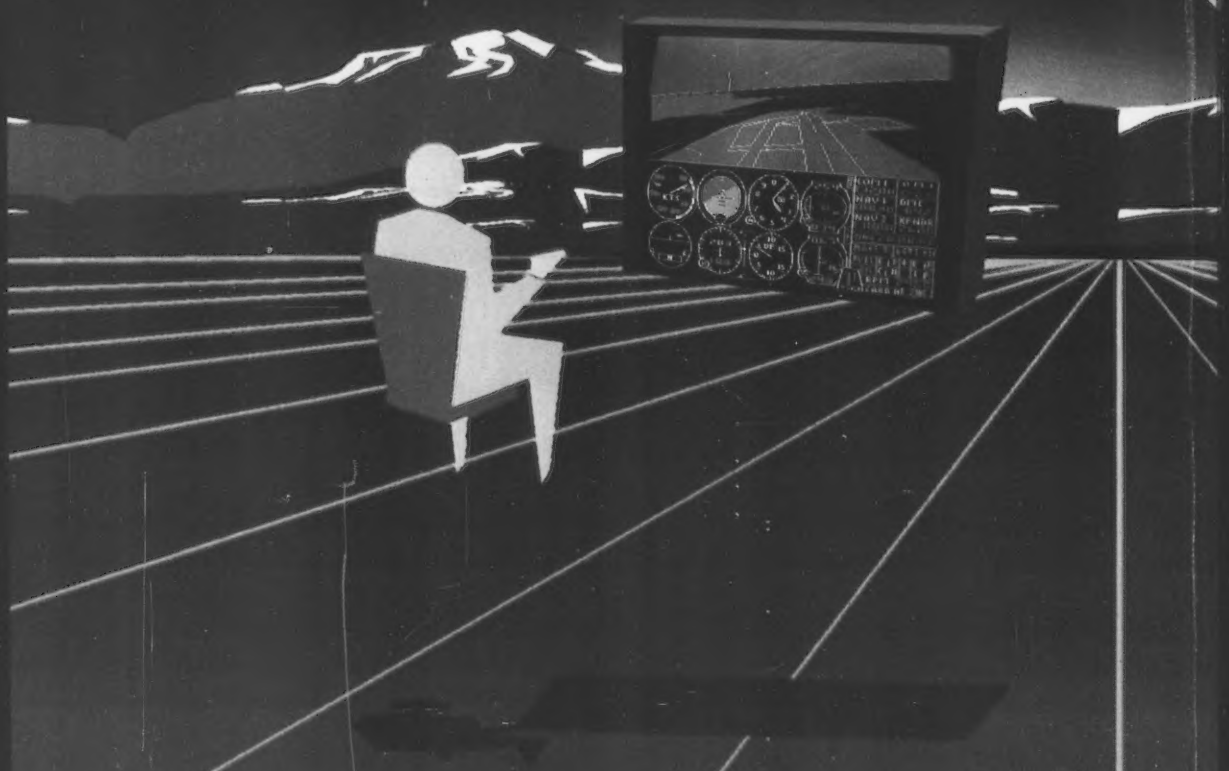
Flight Simulator II

For Apple, Atari®, & Commodore 64™



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Champaign IL 61820
(217) 359-8482 Telex: 206995

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IRS acceptable format, with Form 1040 printed directly on an official IRS form.

Forms: A, B, C, D, E, F, G, R, SE, W, 1040, 2106, 2119, 2210, 2441, 3903, 3468, 4562, 4684, 4797, 5695, 6251, 6252
System: IBM PC, MS-DOS, Apple II, C64, CP/M
Price: $89
Updates: Annual; $36
Manufacturer:
Vision Information Products, Inc.
5500 Atherton St.
Long Beach, CA 90815
(213) 431-5284

Tax Wizard

A menu-driven, tax planning and preparation program geared for individuals and small business owners, *Tax Wizard* simulates IRS forms on a monitor line by line and calculates and organizes tax data. No tax advice is offered, but all forms are linked, showing, for example, the effects of selling one's home or stocks upon a tax base. Altering an entry recalculates all related items. Tax information can be transferred to facsimiles of government forms.

Forms: A, B, C, D, E, G, W, SE, 1040, 1040A, 1040EZ, 4562, 2106, 2119, 2441, 3903, 3468, 4137, 4255, 5695, 6251
System: IBM PC and PCjr, MS-DOS, Apple II, Macintosh, CP/M, C64
Price: $64.95
Updates: Annual at 50% of retail cost
Manufacturer:
Gamma Productions, Inc.
817 Tenth St. #102
Santa Monica, CA 90403
(213) 451-9507

Volts

Especially for tax professionals with micros, *Volts* is a tax preparation and planning program featuring menu-driven screen selection in which data are entered on screens that can be chosen randomly during the client interview; full-screen data entry that permits changes anywhere on the screen; and database structure that allows variable file length and applies data entered to every relevant screen. In addition, *Volts* provides diagnostic messages during the calculation phase that validate data when, for example, a deduction limit on an IRA is exceeded. This feature also prevents entering data for logically contradictory data fields. For instance, if a client has specified an individual return, joint return data fields are locked out. Up to nine different tax scenarios per client can be calculated and compared. Three different packages are offered: *Volts I, Individual Package; Volts II, Professional Package*; and *Volts III, Partnership/Corporate.*

Volts can print returns on continuous IRS forms, plain paper for use with transparent overlays, and IRS-approved substitute forms. Forms can be prepared individually or in batch mode. California state form is available, with other state packages planned.

Forms: A, B, C, D, E, F, G, R, SE, W, K, K-1, 1040, 1040A, 1040ES, 1065, 1120, 1120S, 1116, 2106, 2119, 2210, 2220, 2441, 3468, 3903, 4136, 4137, 4255, 4562, 4626, 4684, 4797, 4835, 4952, 4972, 5329, 5695, 6251, 6252
System: 128K IBM PC, MS-DOS
Price: Volts I, $500; Volts II, $1500; Volts III, $1000; California, $750
Updates: Annual at a "reasonable price."
Manufacturer:
Hanover Software Systems
1344 East Katella Ave.
Anaheim, CA 92805
(714) 385-1556
(800) 223-8385
(800) 874-9806 in CA

Tax Preparation

Easier Than 1-2-3 Tax Preparer

A macro-command application for *Lotus 1-2-3*, the *Easier Than 1-2-3 Tax Preparer* is visually oriented with calculations and totals changing on-screen in response to entered data. The tax preparation program continuously calculates a tentative tax using either the standard or the X,Y,Z tax tables, and automatically links all data entered on a federal form or schedule with other forms without re-entry. Command selection is based upon three letter keys and two menus, one listing the various forms and the second showing the required order of completion. Files are organized by client with the only limitations being the filenames and the necessity of keeping all records for a particular client on the same disk to allow linkage, "what if" scenarios, and income averaging. The program provides working copies of the 1040 and substitute copies of other forms, and prints directly on government forms.

Forms: A, B, C, D, E, G, SE, W, 1040, 2106, 2106-2, 5695
System: IBM PC, MS-DOS
Price: $175
Updates: Annual
Manufacturer:
Professional Software Technology
P.O. Box 269
Rockport, MA 01966
(617) 546-3494

Corp/84, Tax 84/CPA

A variety of programs has been combined into professional and corporate packages to cover a wide range of federal and state income tax applications. The *Tax/84* segment is a set of programs for the preparation of individual tax returns for Form 1040 and supporting schedules. Individual programs collect information on interest and dividends, personal business, capital gains and losses, and rents, royalties and supplemental income. The *Professional Package* is designed for CPAs, individual tax preparers, and service bureaus, adding batch processing capability on continuous forms. *Corp/84* is the basis for the *Corporate Package* that supplies the preparation and additional forms for corporate and small business applications. *Taxstrat* is a single program that can be used alone or in combination with the professional and corporate packages to calculate three options for a given set of conditions. Available states are New York, New York City, New Jersey, Massachusetts, Pennsylvania, Maryland and Illinois.

Forms: Tax/84 CPA: A, B, C, D, E, F, G, SE, R & RP, W, 1040, 1040A, 2106, 2210, 2219, 2440, 2441, 3468, 3903, 4562, 4684, 4797, 4835, 5695, and 6251. Corp/84: A, C, D, E, F, J, K-1, K, L, M, L1, L2, D1120, 3468, 4562, 4797
System: IBM PC, MS-DOS, CP/M
Price: Tax 84/CPA: $1000; Corp/84, $500; Taxstrat, $150; States, $200-$500
Updates: Annual
Manufacturer:
Computer Technical Services of N.J.
825 North Broad St.
Elizabeth, NJ 07208
(201) 353-5283

G & G 1040

Offered in a Professional Series that processes 33 IRS schedules and a Starter Series with 15 schedules, *G & G 1040* is a tax preparation program that inputs to screens which match the selected IRS form. It makes all calculations and choices for the least tax consequences, offers 10-year averaging of all retirement distributions versus capital gains on part, plus alternative minimum tax, and includes optional state sales tax, excess

FICA, earned income credit, income averaging, and underestimated penalties. Unlike the Starter Series, the Professional Series includes a batch compute/print mode and a depreciation module. The Professional Series also integrates with the following state income modules: New York, California, Kansas, Missouri, Wisconsin, North and South Carolina, Oklahoma, Illinois, Minnesota, Arkansas, and Colorado. If your state is not available, G & G will write the program for you when you purchase the Professional Series.

Forms: A, B, C, D, E, F, G, R, RP, SE, W, 1040, 1116, 2106, 2119, 2210, 2440, 2441, 3468, 3903, 4136, 4137, 4255, 4562, 4625, 4684, 4797, 4835, 4952, 4972, 5695, 5884, 5251, 6252
System: IBM PC, MS-DOS, CP/M-80, CP/M-86
Price: Professional, $600; Starter, $250; state modules, $250 to $500
Updates: Annual; Professional, $300; Starter, $150
Manufacturer:
G & G Software, Inc.
610 Park Blvd.
Austin, TX 78751
(512) 458-5760

Lacerte Tax System

Aimed at CPAs and tax accounting professionals, the *Lacerte Tax System* package can produce six complete IRS returns an hour or will batch process more than 100 returns per day and will have all forms generated for both federal and state on plain white paper and in client order. While geared to the 1040 form, the 1120 corporation and 1065 partnership programs are available for federal returns as separate modules. In addition to federal returns, the company offers programs for 21 states, Alaska, Arizona, California, Connecticut, Georgia, Idaho, Illinois, Indiana, Kansas, Louisiana, Maine, Massachusetts, Michigan, New Jersey, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Tennessee, and Utah. All forms are generated on the Hewlett-Packard Laser Jet printer which the company markets separately for $3495.

Forms: A, B, C, D, E, F, G, R, SE, W, 1040, 1040ES, 1040X, 2106, 2119, 2210, 2441, 3468, 3903, 4255, 4562, 4797, 4972, 5695, 6251, 6252, most state equivalents.
System: IBM PC, MS-DOS, Tandy Models II and 2000, HP/50, DEC Rainbow 100 and 100+
Price: $2250
Manufacturer:
Lacerte Microcomputer Corp.
3447 Atlantic Ave.
Long Beach, CA 90807
(213) 595-0901

Master Tax, Standard Tax

For professional accountants, tax practitioners, and financial advisors, *Master Tax* is a tax preparation program that offers amortization and depreciation programs, overflow schedules, word processing, client instruction letter, fee schedules, and K-1 input screen. Data files transfer from year to year to provide a database that can be recalled annually, generate a pro-forma or tax organizer, and automatically choose the most advantageous tax method. A laser print option interfaces with microcomputers and laser printers without the need for hard disk storage. Preprinted, continuous forms, blank paper with overlays, and computer generated forms are standard features. The *Standard Tax* program is designed to meet the less sophisticated needs of the professional tax preparer, providing a comprehensive tax preparation process that includes some of the features of the *Master Tax* program. *Standard Tax* users who upgrade to *Master Tax* will have compatible data files for immediate expansion of client and form processing capability.

State programs with overflow schedules, editing functions, and batch printing are available for Arizona, California, Colorado, Illinois, Michigan, New Jersey, New York, North Carolina, and Pennsylvania. Prices range from $200 to $500.

Forms: A, B, C, D, E, F, G, R&RP, SE, W, ES, 1040, 1116, 2106, 2119, 2210, 2441, 2555, 3468, 3903, 3903F, 4136, 4137, 4255, 4562, 4684, 4797, 4835, 4952, 4972, 5695, 5884, 6251, 6252, Sales Tax Tables for Schedule A.

> **Of life's two certainties, taxes are the only one for which you can get an automatic extension.**
> **—Jim Fisk and Robert Barron**

System: IBM PC, MS-DOS, CP/M-80, and DEC Rainbow
Price: $1795; laser print option, $500
Manufacturer:
CPAids, Inc.
1061 Fraternity Circle
Kent, OH 44240
(216) 678-9015

PC-Tax

Developed for professional tax preparers, *PC-Tax* presents a base system, Module A, with three separate modules that can be purchased individually. Module A prepares taxes for the 1040, A, and B, and stores returns with its Quik Tax Computation. It makes all secondary calculations required on returns, presents results on screen for inspection, and prints the complete return on plain computer paper with overlays or on pre-printed paper in an IRS-approved format. A type-bill function allows billing of clients. Additional forms and schedules are contained in Modules B, C, and D. One state form is available, California, with others planned.

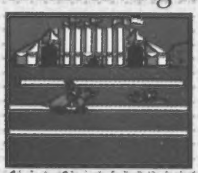
Forms: Module A—1040, A, and B; Module B—C, D, E, SE, and W; Module C—R, 2441, 3468, 3903, 4797, 5695; Module D—F, G, 2119, 4136, 6251, 2106, 2210
System: IBM PC, MS-DOS, all major Tandy models
Price: Module A, $349; Module B, $189; Module C, $189; Module D, $239; entire system, $940; California, $395
Updates: Occur when IRS schedule changes.
Manufacturer:
Contract Services Associates
706 S. Euclid
Anaheim, CA 92802
(714) 635-4055

Professional Tax System

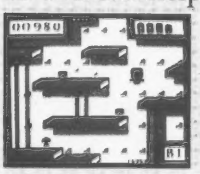
Automated, rapid in-house preparation of client tax returns is the purpose of the *Professional Tax System*, designed for CPAs, accounting firms, and tax preparation bureaus. Built-in reconciliation automatically reconciles taxpayer information to taxable income and maintains an audit trail to record changes to the return. The program tracks the status of a client's return while it is being processed, plans subsequent returns for clients, and offers three methods for printing tax forms. The manufacturer provides step-by-step documentation and a toll-free telephone support line for questions. Two state programs

Home is where the fun is!

We're famous for our educational software — sparkling programs that help children build important skills. We're just as famous for award-winning family games you'll find in thousands of fun-loving homes across the country.



Like *Chivalry*™, a delightful combination of software and a board game. *Softalk* says it's "as much fun for grown-ups as for kids." And *Old Ironsides*®, a rollicking sea battle that *inCider* ranks among the best games ever created for the Apple II.® You can help ORBIT the Robot escape from the bad guys in *Run For It*™, with its amazing 3-D effect. Or lead our troops to victory in *Beach Landing*™, a spine-tingling strategy game. No matter which games you choose for your home, you'll get *Weekly Reader Family Software's* acclaimed graphics, playability and color. Plus, all sorts of extras — posters, binders, stickers, user's guides, and more. Ask for *Weekly Reader* games at your local computer store, or call 1-800-852-5000, Dept. AM-21. *Weekly Reader Family Software* games are available for the Apple, Commodore 64,™ and Atari® computers.



Developed by Optimum Resource, Inc.

Weekly Reader Family Software

A division of Xerox Education Publications
Middletown, CT 06457

CIRCLE 149 ON READER SERVICE CARD

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A/M01AM21

Why every kid should h

Today, there are more Apples in schools than any other computer.

Unfortunately, there are still more kids in schools than Apples.

So innocent youngsters (like your own) may have to fend off packs of bully nerds to get some time on a computer.

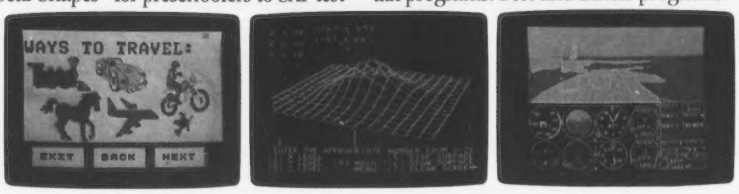
Which is why it makes good sense to buy them an Apple® IIc Personal Computer of their very own.

The IIc is just like the leading computer in education, the Apple IIe. Only smaller. About the size of a three-ring notebook, to be exact.

Of course, since the IIc is the legitimate offspring of the IIe, it can access the world's largest library of educational software. Everything from Sticky-bear Shapes™ for preschoolers to SAT test preparation programs for college hopefuls.

In fact, the IIc can run over 10,000 programs in all. More than a few of which you might be interested in yourself.

For example, 3-in-1 integrated business software. Home accounting and tax programs. Diet and fitness programs.



With a IIc, your kid can do something constructive after school. Like learn to write stories. Or learn to fly. Or even learn something slightly more advanced. Like multivariable calculus.

Not to mention fun programs for the whole family. Like "Genetic Mapping" and "Enzyme Kinetics."

ve an Apple after school.

And the Apple IIc comes complete with most everything you need to start computing in one box.

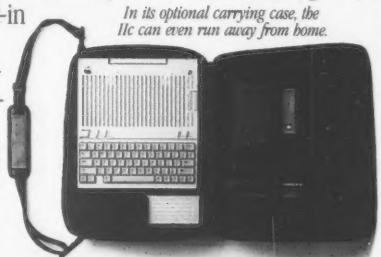
Including a free 4-diskette course to teach you how—when your kids get tired of your questions.

As well as a long list of built-in features that would add about $800 to the cost of a smaller-minded computer.

128K of internal memory—twice the power of the average office computer.

A built-in half-high 140K disk drive that could drive up the price of a less-senior machine considerably.

And built-in electronics for adding accessories like a printer, a modem, an AppleMouse or an extra disk drive when the time comes.



In its optional carrying case, the IIc can even run away from home.

So while your children's shoe sizes and appetites continue to grow at an alarming rate, there's one thing you know can keep up with them. Their Apple IIc.

To learn more about it, visit any authorized Apple dealer. Or talk to your own computer experts.

As soon as they get home from school.

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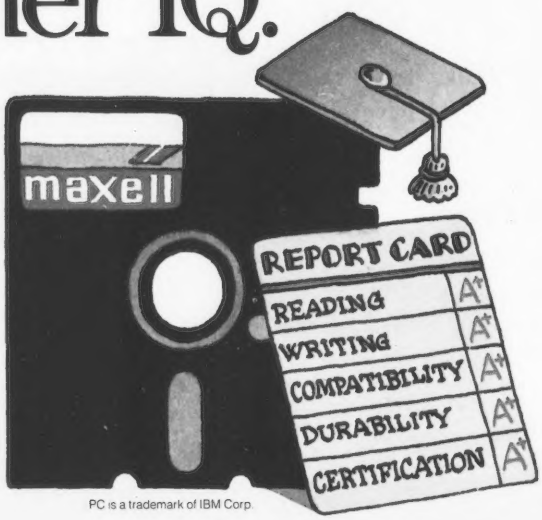


PC is a trademark of IBM Corp.

Maxell Corporation of America, 60 Oxford Drive, Moonachie, N.J. 07074

CIRCLE 125 ON READER SERVICE CARD

are available, Illinois and Florida, with other states promised.

Forms: A, B, C, D, E, F, G, R, SE, W, K-IP, K-1B, K-1S, 1040, 2106, 2119, 2210, 2441, 3468, 3468B, 3800, 3903, 4136, 4255, 4562, 4684, 4797, 4835, 4952, 4972, 5695, 5884, 6249, 6251, 6252, 1040ES
System: IBM PC, MS-DOS
Price: $1500 for 1984 version.
Updates: Annual; $500
Manufacturer:
BPI Systems
3423 Guadalupe
Austin, TX 78705
(512) 454-4677

Series 1040

For professional tax preparers, *Series 1040* displays IRS schedules on-screen, allows input of data, and then calculates and shows the results immediately. The program comes with the following automatic features: earned income credit calculation, taxable amount of unemployment and Social Security income, tax method comparison, excess Social Security tax withheld, client directory and telephone listing, cover letter, and a provision for mailing labels. Additionally, *Series 1040* has a re-compute feature that chooses the desired screen and allows new information to be entered and automatically calculated. An abort feature permits interruption of a current job to switch to another client's data.

State forms are available for New York, including New York City, New Jersey, Massachusetts, Connecticut, and Vermont, with other state programs planned.

Printing options include preprinted forms, overlays, batch printing, and computer generated, IRS-approved forms, and schedules printed in IRS mailing order.

Forms: All lettered forms, 1040, 3468, 4562, 1040ES, 2106, 2119, 2210, 2440, 2441, 3468, 3903, 4136, 4137, 4255, 4562, 4684, 4797, 4972, 5695, 5884, 3800, 4835
System: IBM PC, MS-DOS
Price: Federal $1001.50; States $395 to $795
Updates: Annual; 50% of the then-current cost. Updates within a year included with basic package.
Manufacturer:
Calcu-Tec Computer Software
110 Hillside Ave.
Springfield, NJ 07081
(201) 467-3757

SofTax

The *SofTax* package provides three versions for federal income tax preparation. The Individual version, containing 20 1040 forms, is for people who prepare their own returns. The Preparer's version, containing 30 1040 forms and schedules, is for professionals who prepare forms and schedules for multiple clients. This version also offers batch printing, client bill/cover letters, and an organization form. The Professional version includes everything in the Preparer's version and adds corporate, partnership, and trust returns.

In addition, *SofTax* now offers state packages which prepare individual and corporate returns. The following state programs are available, with the remaining states to be offered eventually: California, New York, New Jersey, Missouri, and Virginia. The state packages integrate with the federal forms.

Forms: Individual, A, B, C, D, E, F, G, R, SE, W, 1040, 1040A, 1116, 2106, 2119, 2210, 2441, 4562, 4797, 5695, 6251. Preparer, all of the above plus 2555, 3468, 3800, 3903, 3903F, 4255, 4684, 4972, 6252, ES. Professional, all of the above plus K-1 and corporate, partnership, and trust returns.
System: IBM PC, Apple II
Price: Individual, $199; Preparer's, $499; Professional, $850
Updates: Annual; Individual, $70; Preparer's, $150; Professional, $225
Manufacturer:
Design Trends Ltd.
525 So. Washington St.
Naperville, IL 60540
(312) 357-2664
(800) 243-4358

Software 1040, Plan 1040

Designed by CPAs for CPAs, *Software 1040* is an award-winning tax preparation program that accommodates computer novices with strong after sales support. A videotaped training program is available along with a staff of CPAs, lawyers, and dataprocessors to answer questions by phone. First time users can key in data throughout the year and add updated information during the tax season. By applying current tax regulations to the previous year's income tax data, a pro-forma is generated that both creates an audit trail for accountants and provides a "what if" scenario for future tax situations. Forms are enclosed to show prior year data with blanks for clients to fill in for the current year. All state forms are available, except Hawaii, which will be included by next tax season. Returns are produced through batch processing and preprinted forms. For professional and individual tax planning, 1040 Software, Inc. also offers *Plan 1040*, which can be used as a stand-alone package or integrated with *Software 1040*.

Forms: A, B, C, D, E, F, G, 1040, 1116, 2106, 2119, 2210, 2441, 3468, 3903, 4136, 4255, 4562, 4684, 4797, 4798, 4835, 4868, 4952, 4972, 5695, 6249, 6251, 6252, 1065
System: IBM PC, MS-DOS
Price: Federal, $1800; states, $400; Plan 1040, $150
Manufacturer:
1040 Software, Inc.
10 Nevada Dr.
P.O. Box 1010
New Hyde Park, NY 11042
(516) 775-5566

Swiftax

Swiftax is a federal income preparation program with full prompting that guides the user with explanations of tax laws and instructions about which forms to file and which items need to be reported. A special backup feature produces extra copies of information, which can be printed on tax forms provided by the manufacturer. *Swiftax* also features an automatic check of tax alternatives, computation of the lowest amount of income tax that can be paid, and a Taxpayer File that allows changes to be made later. Amortization schedules with yearly principal and interest payments are included.

Forms: A, B, C, D, G, W, SE, 1040, 1040A, 1040EZ
System: C64, Atari 800, Apple II, IBM PC, PCjr, MS-DOS
Price: C64 and Atari 800, $49.95; Apple II, IBM PC, PCjr, MS-DOS, $69.95
Updates: Annual
Manufacturer:
Timeworks
444 Lake Cook Rd.
Deerfield, IL 60015
(312) 948-9200
(800) 323-9755

Taxaid

Specializing in Commodore computer tax programs, Taxaid Software has updated its *Taxaid* for the new Plus/4. Designed for home use, *Taxaid* is menu driven, has editing features for making

revisions at any time when entering data, and has a manual that leads the user step by step through the data entry process. All tax tables, including income averaging, are built in; calculations are automatic; and any IRS form 1040 can be prepared with the results displayed on monitor or printer.

Forms: A, B, C, G, W, 1040, 2441
System: C64, Plus/4
Price: $29.95
Updates: Annual
Manufacturer:
Taxaid Software, Inc.
606 Second Ave., SW
Two Harbors, MN 55616
(218) 834-5012
(218) 834-3600

Taxexec

A complete tax preparation program for individuals and professionals, *Taxexec* features single question and answer messages, audit trails, and an automatic data verification and limit test that insures accuracy by producing an error if, for example, a deduction limit is exceeded. State returns that integrate with the federal form are available for Pennsylvania, Ohio, Maryland, New Jersey, and California, with the remaining state returns planned.

Forms: A, B, C, D, E, F, G, R, RP, SE, W, 1040, 2106, 2119, 2210, 2441, 3468, 3903, 4136, 4255, 4562, 4684,4797, 4835, 5695, 6251
System: CP/M, IBM PC, MS-DOS
Price: Federal program, $995; state programs, $500
Updates: Annual; federal, $250; state, $150
Manufacturer:
Micro Information Systems, Inc.
Richardson, Rt.309 Richardson Rd.
Montgomeryville, PA 18936
(215) 855-2700

Tax Manager

For individuals and small business operators, *Tax Manager* is a tax preparation program that determines which forms to file and which deductions to make by posing a series of questions to the user. Hence, the program can be used by novices in both tax preparation and computer use. *Tax Manager* checks addition and subtraction calculations, ensures that data are entered in the correct lines, and catches inconsistencies and deduction errors. A change in one figure automatically changes related figures, enabling inspection of alternative tax situations. Printing can be done through continuous feed on IRS-approved forms.

Forms: A, B, C, D, E, F, G, SE, W, R, 1040, 1040EZ, 1040ES, 2106, 2119, 2210, 2441, 3468, 3903, 4797, 5695, 6251
System: Atari, C64, Apple II, Macintosh, IBM PC and PCjr
Price: Atari and C64, $75; Apple II and Macintosh, $180; IBM PC and PCjr, $250
Updates: Annual; $30
Manufacturer:
MicroLab
2699 Skokie Valley Rd.
Highland Park, IL 60035
(312) 433-7550

The taxpayer—that's someone who works for the federal government but doesn't have to take a civil service examination.
—Ronald Reagan

Tax Return Helper

A tax preparation program, *Tax Return* requires no prior knowledge of programming or tax preparation to use, according to the manufacturer. The program allows data to be entered and modified on a screen copy of a form or schedule, updates all lines affected by a single change, correlates Form 1040 and Schedule A, and displays tax tables and rate schedules for every filing status. A database is included in the disk version to build files of tax related records that can be used year round.

Forms: A, B, C, D, E, G, W, 1040, 2441
System: C64
Price: Cassette, $23; disk, $33
Manufacturer:
KSoft Co.
845 Wellner Rd.
Naperville, IL 60540
(312) 961-1250

1040 Plus

A federal tax preparation program for the professional preparer, *1040 Plus* offers a modular approach to building a professional service package as well as a VHS video demonstration tape to illustrate the mechanics of the program. The video tape shows the installation of the program, selection of forms and schedules, data entry and screen handling, and the printing of tax returns on federal forms. The partial package purchase program allows small service bureaus to tailor applications to specific client needs in personal income tax preparation. The program also features multiple schedule operations with the accumulated totals automatically entered on the 1040. A state form is available for Arizona with other states planned.

Forms: A, B, C, D, E, F, G, R, & RP, SE, W, 1040, 1040A, 1040X, 1040ES, 2106, 2119, 2210, 2441, 3468, 3903, 4562, 4797, 4972, 5695, 6251, 6252
System: IBM PC and compatibles, MS-DOS, and CP/M
Price: Short Set, 1040, A, B, $75; Other schedules and forms, $25. Complete federal: $550. Arizona: $50.
Updates: Annual. 60%-75% of retail price.
Manufacturer:
1040 Plus
6730 E. McDowell Rd. #103
Scottsdale, AZ 85257
(602) 941-3407

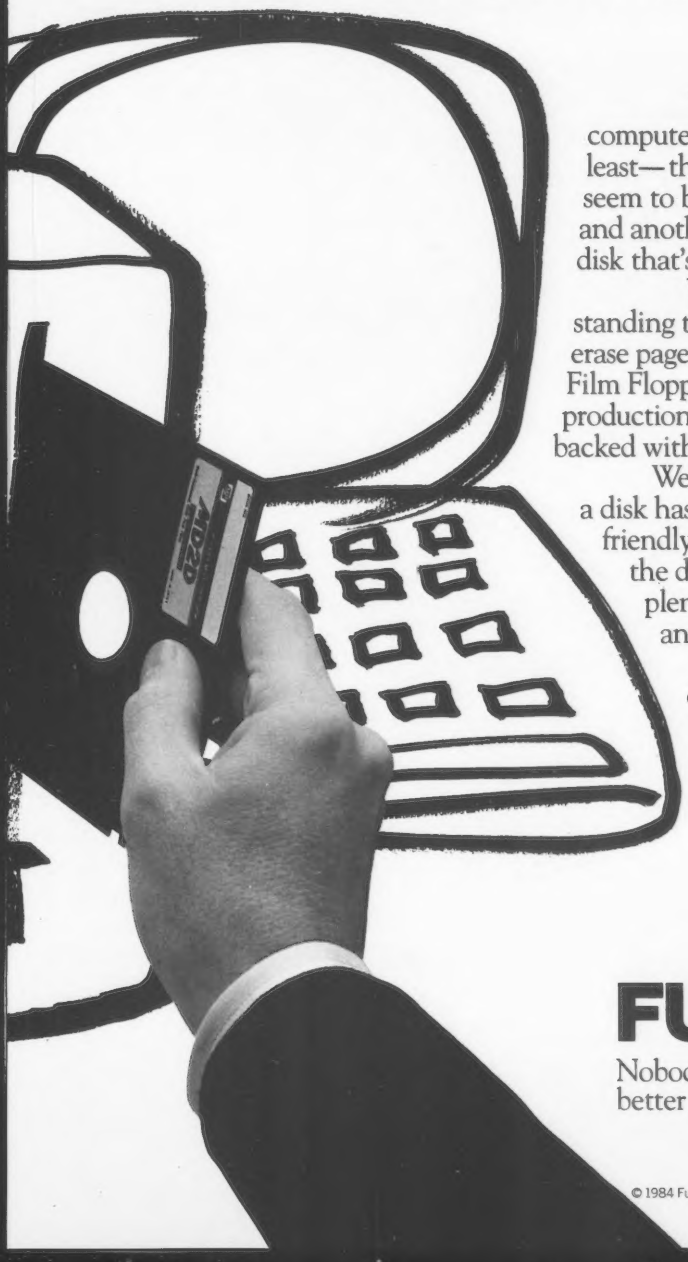
The Tax Advantage

A tax preparation program, *The Tax Advantage* is designed to be easy to use. It displays the necessary keystrokes for entering data at the bottom of the screen and offers explanations of all questions on the forms and schedules at the Help key command. The program includes income averaging; itemizing of wages, deductions, and assets; and computing of alternative minimum tax. With the exception of the 1040, information can be printed directly onto the IRS forms. By interfacing the program with *The Home Accountant*, a database also by Arrays, Inc./Continental Software, a user can transfer and automatically enter financial data in applicable forms and schedules.

Forms: A, B, C, D, E, G, SE, W, 1040, 6251, 2106, 2441, 4562
System: IBM PC, MS-DOS, Apple II, C64, Atari
Price: $69.95
Updates: Annual
Manufacturer:
Arrays, Inc./Continental Software
11223 South Hindry Ave.
Los Angeles, CA 90045
(213) 410-3977

■

A year's worth of reports, plans, schedules, charts, graphs, files, facts and figures and it could all be lost in the blink of an eye.



The most important part of your computer may be the part you've considered least—the floppy disk. After all, there doesn't seem to be much difference between one disk and another. But now Fuji introduces a floppy disk that's worth a second look.

We designed our disk with the understanding that one microscopic imperfection can erase pages of crucial data. That's why every Fuji Film Floppy Disk is rigidly inspected after each production process. And that's why each one is backed with a lifetime warranty.

We've even considered how carefully a disk has to be handled, so we designed user-friendly packaging that makes it easier to get the disk out of the box. And we provided plenty of labeling space, so you won't have any trouble telling which disk is which.

So think twice before buying a floppy disk. And then buy the one you won't have any second thoughts about. Fuji Film Floppy Disks.

FUJI.

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CIRCLE 116 ON READER SERVICE CARD

Top Modem

• Hayes Compatible • More Features • Only $495

The best price/performance ratio of any 212A modem on the market today for under $500! That puts ProModem 1200 on top of the stack. Compare the 26 features. You'll see why. Only ProModem offers all 26. 15 are exclusive.

They're important features. The Real Time Clock/Calendar for example. Used with Applications Programs, or the OPTIONS PROCESSOR, gives you pre-set timed operation of the modem. Also, time and duration records of all calls. The convenient HELP command makes ProModem easy to use. It promptly displays the Instructions Menu whenever there's a question about what to do next. With Call Progress Detection, you can "tell" ProModem to do things like automatically "Redial When Busy."

It's the only modem that lets you expand into a full telecommunications center with add-ons. The OPTIONS PROCESSOR gives you Data Store and Time Base Continuity with battery backup, Personal/Business Telephone Directory, and Automatic Receipt/Transfer Buffer, expandable to 64K. The OPTIONS PROCESSOR also enables ProModem to operate unattended, with or without your computer.

The optional 12-character ALPHANUMERIC DISPLAY indicates modem operating status, system diagnostics, message status, phone numbers, and real time clock data. . . to name just a few.

Together, these standard and optional features give you a sophisticated electronic mail and communications capability unmatched by any other modem in this class. And, there's more. See your local dealer for additional information and a demonstration. He'll show you why ProModem 1200 is tops.

ProModem 1200 from...

PROMETHEUS®

Prometheus Products, Inc., 45277 Fremont Blvd., Fremont CA 94538, (415) 490-2370

NOW AVAILABLE
- ProModem plug-in cards for IBM PC and Apple II
- ProCom Software

212A Modem Comparison Chart *

STANDARD FEATURES	PRO	HAYES STACK	NOVATION SMARTCAT+	ANCHOR 1200	US ROBOTICS PASSWORD
300/1200 Baud (212A)	✓	✓	✓	✓	✓
Intelligent Microprocessor	✓	✓	✓	✓	✓
Tone and Pulse Dialing	✓	✓	✓	✓	✓
Hayes Command Compatible (Works with Smartcom™)	✓	✓	✓	✓	
Additional telephone jack with exclusion switching					
Analog loop back self test	✓	✓	✓		
Self Test at Power Up	✓		✓		
Call Progress Detection (Busy, Dial Tones, Trunk Busy, etc.)	✓		✓		
Speaker and External Volume Control	✓	✓	✓		
Full Complement of Status Lights	✓	✓			
8 Switch Selectable power-up defaults	✓	✓	✓		
Adaptive Dialing	✓				
Auto Redial on Busy	✓				
Ergonomically designed easy to read front display panel	✓				
Internal Stand-Alone Power Supply	✓				
Built in Real Time Clock/Calendar	✓				
Help Command	✓				
300 baud connect while maintaining 1200 baud RS-232 link	✓				

EXPANDABLE OPTIONS	
Automatic Receiver Buffer	
Automatic Transmit Buffer	
On-board Personal/Business Directory	
Buffer, Expandable to 64K	
Auto Logon Macros	
Auto message transmission to groups of numbers	
Records call duration	
12-character Alphanumeric Display	

*Comparison made by Prometheus on the basis of the best information available to Prometheus at time of printing.

CIRCLE 195 ON READER SERVICE CARD

Atari Strikes Back

with six promising new computers that could re-shape the industry

Tim Onosko and John J. Anderson

The secrecy of a military project has shrouded Atari Corporation since last summer when it was taken over by former Commodore head Jack Tramiel, sons Sam (reportedly running the company on a day-to-day basis) and Leonard, and trusted colleagues recruited from their posts at Commodore (or "C-Company" as it is now referred to inside Atari).

The reason for the secrecy—as well as for the uniformed security guards which replaced the company's front desk receptionists—is an entirely new line of Atari products designed to transform the company's image from one of a free-spending video game shop to that of a lean aggressive, leading-edge computer maker. If—and this is a big if—the Tramiel family can pull off its remarkable plan, Atari will fire a salvo that is almost certain to signal an all-out war that could spread to almost every area within the personal computer industry.

Briefly, this calls for Atari to introduce repackaged ultra low-end versions of the existing Atari computers along with very high performance new machines, and a line of new peripherals and other products designed for use with other microcomputers.

These details, obtained as this issue of *Creative Computing* went to press, outline Atari's new strategy. Information was obtained from sources within the company, including Brian Kerr, Atari's new marketing manager. All products mentioned in this story were scheduled for introductions at the Winter Consumer Electronics Show in Las Vegas in January.

The 65XE, 65XEM, 130XE and XEP

The footsoldier of the new Atari line is the 65XE, which at pre-January 800 XL prices ($100-$120), will replace the current computers. Based on the 65XX 8-bit family of processors, the 65XE will sport 64K of RAM and, according to Kerr, will be compatible with all current Atari software. This redesign of the 800 XL was termed "engineering optimization" by Kerr, who stated that the machine has at once been made more cost-effective and more reliable through the use of fewer parts.

Atari 65XE

The 65XE supports the existing model 1050 5.25" floppy disk drive, and Kerr promises Atari will continue to manufacture a 5.25" drive in 1985. However, "in recognition of where the technology is going," Kerr further states that a 3.5" microfloppy drive will also be offered for the XE series. The price of such a unit would be comparable to that of a 1050 (around $200), and "we certainly wouldn't come out with a higher priced drive," said Kerr.

Priced at approximately $30-50 above the 65XE is the 65XEM, which is a standard model XE with one very important addition—the AMY VLSI chip. Calling it an "advanced music synthesizer on a chip," Kerr tagged the advent of AMY as a "breakthrough," and said that the custom processor is capable of "symphonic quality sound." It features up to eight fully independent multitimbre voices comprised of 64 separate and software-configurable oscillators, which can easily change sonic characteristics on the fly. AMY handles 10.75 octaves, from 4.8 Hz to 7.8 KHz, which encompasses the dynamic range of an 88-key piano.

In contrast to more conventional sound synthesis devices like Commodore's SID chip, AMY is based on digital sampling. This approach "recreates" a waveform rather than attempting to imitate it. AMY has a 30KHz digital sampling rate and a 60 dB dynamic range, and runs off the internal clock of the XEM at 7MHz.

Those who have heard AMY confirm that it can realistically portray a wide range of musical sounds. Listeners report, for example, that AMY simulates the highly distinctive "bow attack" of the cello sound with almost discomfiting accuracy. Kerr sees the 65XEM as both a music learning tool and a performance instrument.

The XE micros represent the "red series" Atari machines, marked distinctively with a red Atari logo which indicates their membership in the 8-bit Atari line.

Unpriced at press time is a 128K version of the 65XE dubbed the 130XE. (It seems Atari has finally broken the parochial tradition of systematically underestimating RAM in multiples of 16.) Also to ship is a portable version of

the XE currently labeled the XEP. It sports a built-in microfloppy drive and a 5" monochrome CRT with two available character sizes. The price will be "around $500," says Kerr.

The 130ST and 520ST

Perhaps the biggest news among Atari's planned introductions is its "blue line" of computers, called the ST (for Sam Tramiel?) series. Characterized by a blue logo, they constitute nothing less than Atari's "Manhattan Project." It may be fair to posit that if the Macintosh was the A-Bomb of microcomputing, the Tramiels intend to unleash with the ST series the fury of the H-Bomb. And the fallout will undoubtedly drift over to nearby Cupertino.

Like the Macintosh, the 130ST is a 128K micro based on the MP 68000 processor. It features NTSC, RGB, and hi-res monocrome video output; numeric keypad; HELP and UNDO keys; a built-in disk controller and hard disk interface; RS-232C serial and Centronics parallel ports; a MIDI (for Musical Instrument Digital Interface) I/O for music synthesizer interlock; a cartridge port capable of handling 128K ROM carts; and two joystick ports. One of the ports is designed for mouse input, and yes, you'll find a two-button mouse in the box with the ST series machines.

Atari 130ST

You'll want to use that mouse, too, because packed alongside the other routines in the 192K of onboard ROM inside the ST is the GEM (Graphics Environment Manager) operating system developed by Digital Research. Kerr states that GEM "uses the desktop metaphor that *Xerox* established" (italics ours): Windows, icons, pull-down menus, and point-and-click—in short, the easy way to use computers. GEM also features a built-in clock/calendar and up to six desk accessories.

Sacking the Mac

The two major differences between the Mac and GEM on the ST are speed and color. "This machine has the fastest response of any machine of this type," says Kerr. "And it's got the fastest file load I've ever seen off a floppy disk."

Then there is the difference of color. In monochrome mode, resolution is 640 x 400 (higher than that of the Macintosh). In RGB medium-res, resolution is 640 x 200 in four colors and eight luminance levels per color. In so-called lo-res, resolution is 320 x 200 in 16 colors. Five hundred twelve colors are available on the 130ST on an individually addressable 32K bit-mapped screen.

The 130ST does not come with a built-in drive, so the addition of a 3.5" disk drive will pose an additional expense. This is not a great hardship, however, as the 130ST will retail for approximately $400. As already stated, microfloppy drives will cost in the neighborhood of $200. If this is so, Kerr can rightly claim that an entire system, consisting of computer, drive, and monitor, will come in at approximately half the price of a Macintosh.

The 520ST is a 512K version of the 130ST, and is slated to arrive in the $600 range.

As Atari patriarch Jack Tramiel has said, "Business is war."

Monitors and Printers

In addition to a new line of printers, modems, and peripherals, Atari is initiating its own series of monitors for 1985. These include a 14" NTSC composite color model, 12" RGB medium-res model, and 12" monochrome hi-res model. A monochrome monitor aimed at the 800XL/65 XE line takes the 40-column output of an XE and, according to Kerr, whips it into an 80-column display.

Printers, all of which are being sourced from Asian vendors, will run the gamut from non-impact models to daisywheels. Like the monitors, the printers are meant to work with microcomputers from other manufacturers, as well as Atari's.

What Will Happen, and Will It?

As for our own observations, we find Atari's new strategy very interesting. It includes something to aggravate almost everyone currently in the microcomputer business.

For Commodore, it means competition in the consumer priced 8-bit computer market and probably a realignment of their own low-end price structure. The introduction of the powerful ST series could also pre-empt Commodore's own high performance home computer, the fabled Amiga.

For Apple, the news is even worse. Atari could demonstrate that the features that drew so much attention to the Macintosh are not unique among consumer computers. At Apple's current prices and the (current) inability of the Mac to deliver color video, the new Atari Machines could divert much of the Mac audience.

And, although there has been no talk of an Atari computer with IBM PC compatibility (yet), even the value of the PC could eventually be called into question by the Tramiels' new computers. If, for instance, the price and performance of the so-called business standard machines—PCs and clones—is suddenly eclipsed by a line of cheap home machines, what will happen to those current darlings of the industry?

Naturally, dramatic introductions like these will be greeted with skepticism. Commodore under Jack Tramiel was notorious for announcing products that never made it to retailers' shelves, but Atari's Kerr claimed the 65XE was in production as this was written (mid-December, 1984) and that the 130ST would be in production by the time you read this. He further stated that the remainder of drives, monitors, and printers announced at Winter CES 1985 would be delivered during first quarter of 1985. If all (or, indeed, most) of this is true, the Tramiels will have once again wrested the destiny of consumer microcomputing and molded it for many months to come. ■

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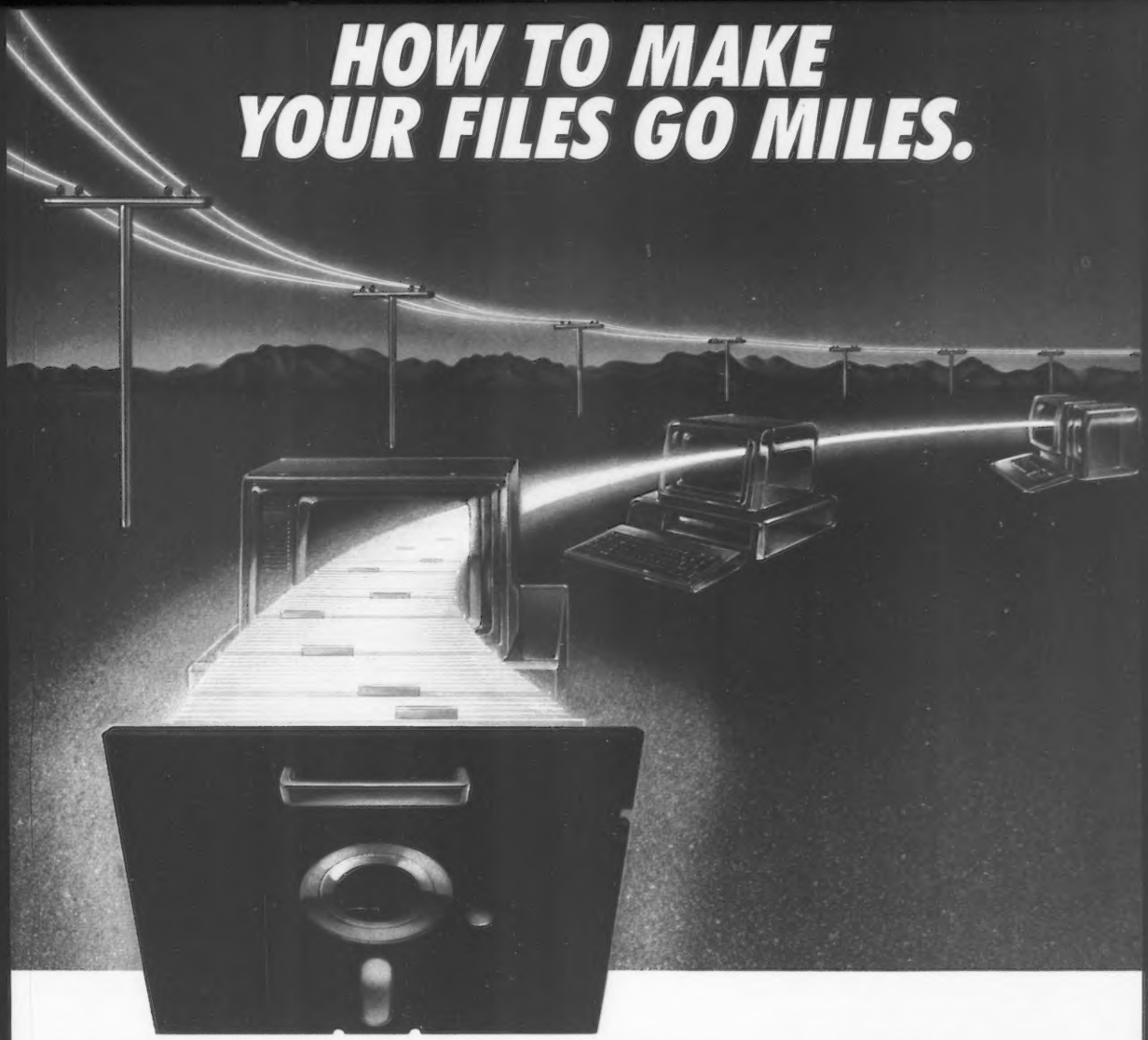

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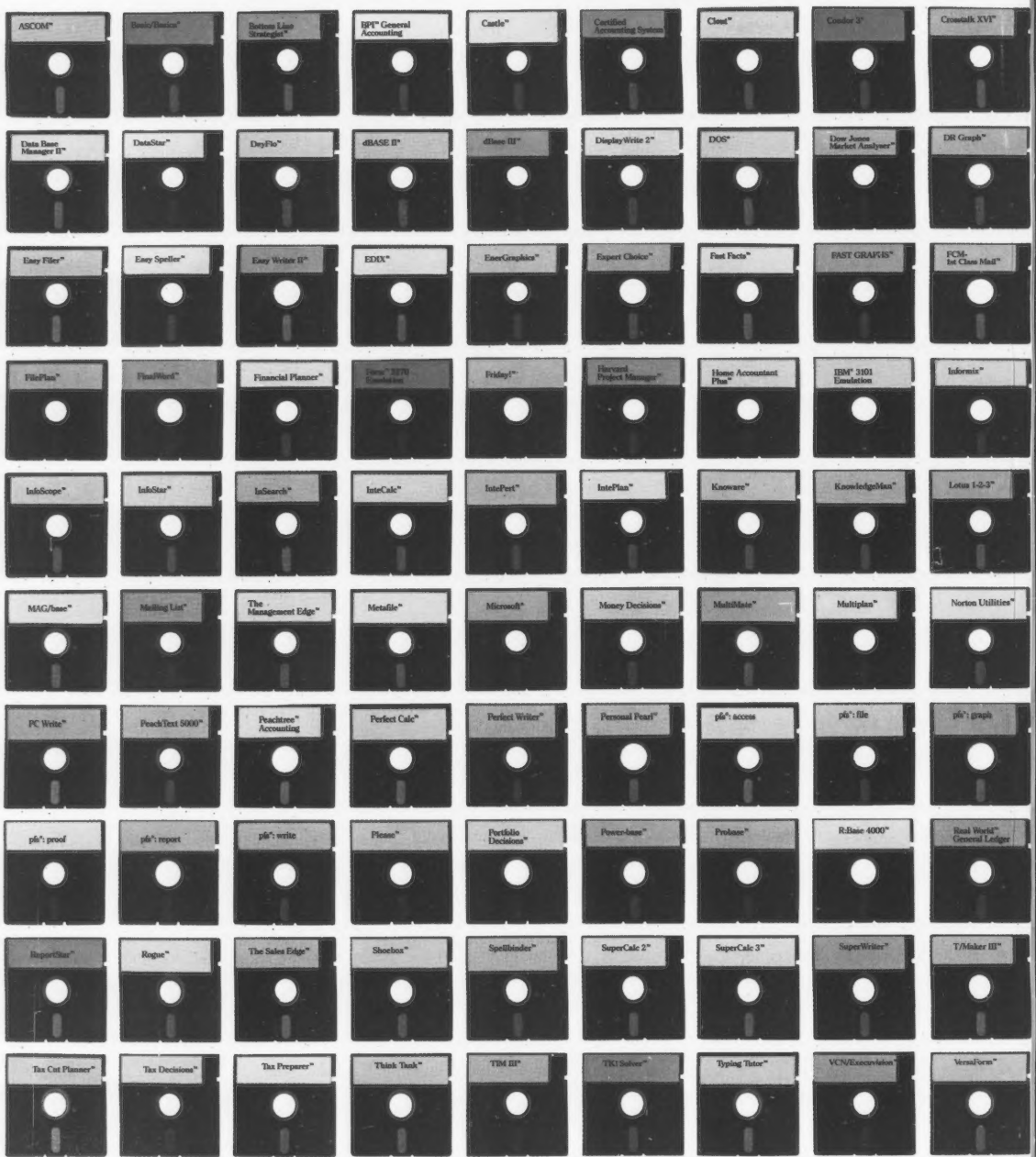

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The successor to the Model 100 offers more memory, a larger screen, better cursor key layout, and Multiplan in ROM

Tandy Model 200

Owen Linzmayer

The Tandy Model 200 portable computer is a surprising machine. Surprising for what it's not, more than for what it's got. Ever since word leaked out that a successor for the phenomenally successful Model 100 was in the works, people have been waiting eagerly for its release. Journalists had speculated that it would be a 64K machine with 80-column display—possibly even an IBM compatible. They were wrong. Herein we take a close look at the real Model 200.

Family History

To fully appreciate the Model 200, a layman's understanding of the Model 100 is in order. Briefly, the Model 100 is a notebook-sized portable computer with a 40-column by 8-line liquid crystal display (LCD) and a built-in 300 baud modem. The computer can be equipped with 8 to 32K of RAM and has several useful programs residing in ROM. One of the most appealing points of the Model 100 is that there is effectively no operating system, thus making it a very friendly machine for even a novice to operate. All of these features combine to make the Tandy Model 100 the most successful portable lap-sized computer to date—admittedly a tough act to follow. Enter the Model 200.

As the name implies, the Model 200 is an enhanced version of its predecessor. Major differences include a 40-column by 16-line flip-up display, 24K to 72K of RAM, 72K to 104K of ROM, improved cursor key cluster, and the *Multiplan* spreadsheet in ROM.

Bigger, but Better?

Because of the flip-up display, the Model 200 is slightly larger than the Model 100, measuring 2.2" x 11.8" x 8.5" and weighing 4.5 lbs. In addition to 16 lines of 40 characters, graphics can be displayed on a 240 x 128 pixel matrix.

My immediate reaction to the display was, "why not 80 columns?" The reason offered by Tandy is that 40 columns is considerably more legible than 80. This, of course, was true during the design stages of the Model 200, but today several 80-column LCD displays are available with excellent legibility. However, I can't blame the folks in Ft. Worth for not wanting to count on such improvements.

Although the display flips open to only one position, a contrast adjustment and non-glare coating assure excellent legibility under almost any lighting conditions. When closed, the display protects the 56-key, full-stroke keyboard. In fact, the 200 keyboard is identical to that of the 100, so if you are accustomed to the latter, you will have no qualms with its implementation on its successor.

The four cursor keys are arranged in a logical diamond pattern, a major

Photography by Jeff MacWright.

Hardware Profile

Name: Tandy Model 200 **Type:** Notebook portable **CPU:** 8-bit CMOS Z80 **RAM:** 24K (expandable to 72K) **ROM:** 72K **Keyboard:** 59 full-stroke keys, 12 function keys **Display:** LCD, 16 lines x 40 characters **Ports:** RS-232, parallel, cassette, bar code reader **Modem:** Built-in 300 baud **Dimensions:** 11.8" x 8.5" x 2.2", 4.5 lbs. **Documentation:** User's Guide, 3 applications manuals **Summary:** Compact AC or battery operated portable with Basic, spreadsheet, telecommunications, and rudimentary text editing software built in **Price:** $999

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improvement over the Model 100.

The 200 offers four special and eight function keys labeled PASTE, LABEL, PRINT, PAUSE/BREAK and F1 through F8. These are located in a single row above the main keyboard and provide one-key command entry, with the software-selectable commands displayed on the bottom line of the LCD screen. The top line contains a continuously-updated status report, with the remainder of the menu screen filled with the names of programs and files stored in memory.

Like Memory in the Bank

As I mentioned earlier, the Model 200 can be loaded with up to 72K of RAM, in three banks of 24K each. You can switch from bank to bank using the appropriate function key. The Model 200 also has the ability to copy files from one bank to another, though you cannot access more than one bank at a time. The partitioning of memory in this manner allows you to make efficient use of each bank. For instance, you can use bank one as a workplace to run a program copied from bank two that requires a data file originally stored in bank three. Each bank has its own menu, and neither switching banks nor pressing Reset disturbs the contents of memory. By the way, to add more memory, be it RAM or ROM, chips are inserted into the empty sockets found under a removable cover on the bottom of the Model 200.

Compatibility Confusion

The Model 200 is almost identical to the Model 100 with regard to hardware specifications and abilities. Inside you have a 80C85 running the entire show at a clock rate equal to that of the Model 100. On the back panel of both machines you find a Reset button, RS-232C female DB-25 connector, system bus connector, parallel printer connector, and phone and cassette DIN sockets. The RS-232C connector can be used to interface to an external 1200 baud modem if the built-in 300 baud unit is too slow for your tastes. In addition to this, you can use this serial port in conjunction with Telcom, the ROM-based telecommunications package, to interface the Model 200 to any other computer with a serial port. Located on the left side of the Model 200 is the bar code reader port and a sliding switch that selects between direct-connect (modular) or acoustic modem use.

The Model 200 can be powered by either an AC adapter or four AA batteries (10 to 16-hour life from alkaline cells). To extend battery life, the computer automatically shuts off if the keyboard has not been touched for a predetermined length of time.

Using the NOTE.DO file in the Model 200, you can program up to 255 alarms and short messages. If you need to be reminded of an appointment on April 20, you can have the computer remind you several hours, days, or even weeks in advance. When the time specified in your note matches that of the internal clock, the Model 200 beeps and a message flashes across the bottom of the screen. The alarm function also has the ability to "wake" the machine if the power is off!

Model 100 software written entirely in Basic with no PEEKs, POKEs, or machine language subroutines will run on the Model 200.

Just about every piece of hardware designed for the Model 100 will function properly with the Model 200, provided that it doesn't require accompanying machine language software. For instance, you can use the Tandy Disk/Video Interface (reviewed December 1984) which gives you external 80-column capability and a 170K 5-1/4" disk drive.

Model 100 software written entirely in Basic with no PEEKS, POKES, or machine language subroutines will run on the Model 200. This may not be as limiting as it sounds as much of the commercial software and most user-written programs do not use machine language functions.

Hidden Treasures

The beauty of both Tandy portables is that very nearly all of the software you need is provided in ROM inside the machine. The built-in software consists of a text editor, telecommunications package, address and schedule organizers, Multiplan (63 columns by 99 rows) spreadsheet, and Microsoft Basic. None of these programs can hold a candle to similar desktop versions, but then they weren't meant to. These programs were designed to be functional, not full-featured.

Packed with the Model 200 are three supplementary manuals: Tandy 200 *Multiplan*, Telcom Reference, and Basic Reference. In addition to these, the Tandy 200 Technical Reference Manual is available as an option.

Model 100 Criticisms R.I.P.

When Associate Editor John Anderson first reviewed the Model 100 in August of 1983, he was very impressed, though the review was not without criticism. Almost everything that disappointed John has been corrected on the Tandy Model 200. You now have a ceiling of 72K of RAM compared to a maximum of 32K with the Model 100. The auto-dial feature of the modem now encompasses both touch-tone and pulse dialing. The cursor cluster has been greatly improved, and formatting of output for TEXT files is possible.

The Model 200 with 24K of RAM is priced the same as the Model 100 when it was introduced, $999. Each additional 24K RAM module (user installable) retails for $249.95. To some extent, pricing defines your competitors; also at the $1000 price point are the Epson PX-8 Geneva and NEC 8401.

Right for Whom?

Although several notebook computers—all with rather different features—exist at the $1000 price point I have some difficulty trying to determine who the customers are. People who were infatuated with the idea of a truly portable machine and people who needed one for their jobs, mainly journalists, have already purchased one. Those looking for compatible desktop power in a portable are looking at units like the DG/One and the Morrow Pivot. So who needs a Model 200?

Frankly, I think that manufacturers will have to look to developing vertical markets—alone or by cooperating with VARs—to find significant new business. So far, this hasn't been part of Tandy's game plan, but maybe it will be in the future.

Please don't get me wrong: I like the Model 200, although I was a bit disappointed to see such a conservative machine so hot on the trail of the blockbuster 1000 and 1200. If you need a portable and have resisted getting one, perhaps the Model 200 will tip the scales for you. But I question how many scales will be tipped before some major new markets are tapped. ■

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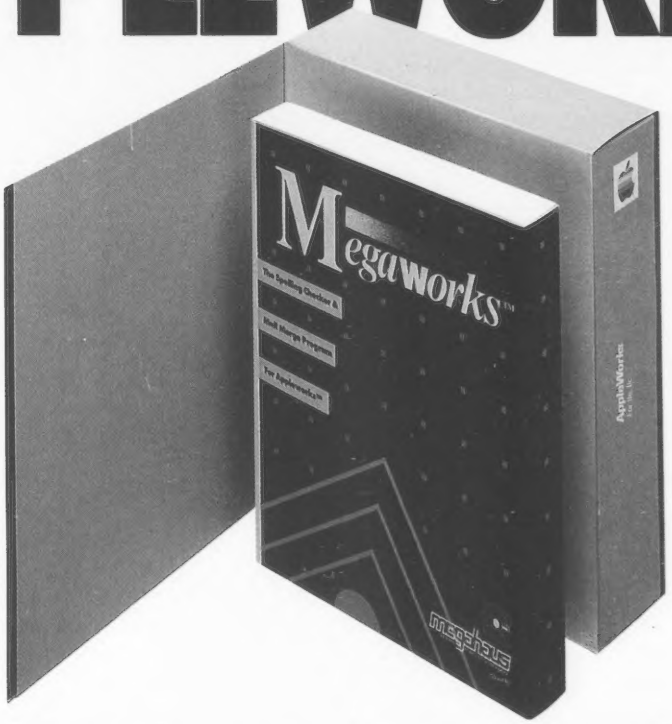

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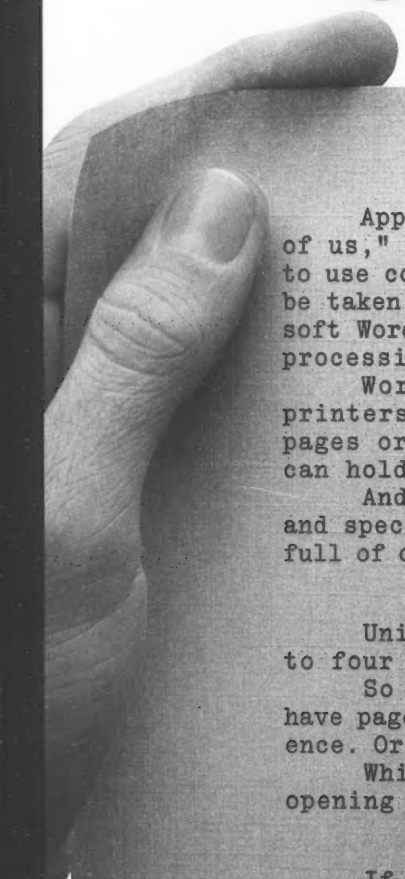

Apple's Macintosh, "the computer for the rest of us," is probably the most advanced and easiest to use computer on earth. But until now, Mac couldn't be taken seriously for word processing. Enter Microsoft Word for the Macintosh. Mac's professional word processing program.

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Key phrases at a keystroke.

If you have a lot of stock paragraphs you use in your writing, Word's glossary feature puts them at the tip of your typing fingers. Just store the pieces of text you need and you can recall them instantly.

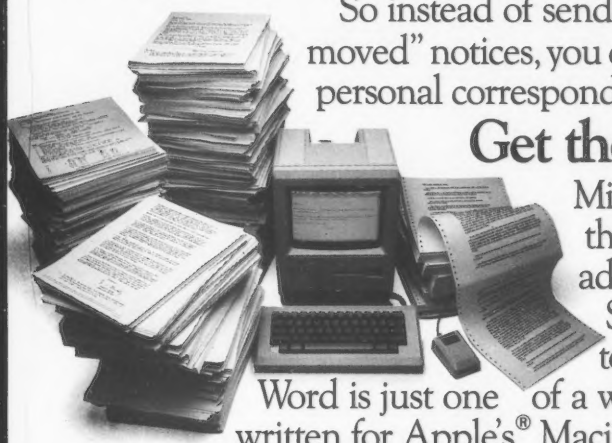
And if you want an alternative to mouse work, you can run your Mac the old fashioned way. Because Word gives you the option to execute commands from the keyboard.

By the way, you don't have to write off your MacWrite documents to convert to Word. It'll run them all right off the bat.

rest of us serious writing.

Reader-friendly form letters.

With Microsoft® Word, you also get a sophisticated "conditional" text merging feature that lets you make customized form letters and documents. So instead of sending out 800 "Dear Client, we've moved" notices, you can mail a letter that will read like personal correspondence.



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CIRCLE 127 ON READER SERVICE CARD

The big four in software—word processing, spreadsheet, database, and communications—for under $1000

NEC 8401A Portable Computer

David H. Ahl

The NEC 8401A is the second generation NEC notebook portable computer. It is significantly different from the 8201, and we expect it will appeal to a different type of customer. Briefly, the 8401 has a 16-line by 80-column fold-up LCD screen, 64K of RAM, and a built-in 300 baud modem, and can be operated using batteries or an AC adapter. It uses the CP/M operating system and has four built-in software packages including *Wordstar-To-Go, Calc-To-Go, Telcom* (telecommunications utility), and *Filer* (personal card filing program).

The basic package includes the computer, phone cable, cassette recorder cable, four manuals, quick reference guide, information about on-line services, and license and warranty cards. The package does not include either an AC adapter or batteries. Optional peripherals include a CRT/disk adapter, micro floppy disk unit, 1200 baud modem, external 32K RAM cartridge, and a wide assortment of cables.

Hardware Profile

Name: NEC PC-8401A **Type:** Notebook portable computer **CPU:** 8-bit CMOS Z80 **RAM:** 64K (optional 32K external cartridge) **ROM:** 96K **Keyboard:** 68 full-stroke keys **Display:** LCD, 16 lines x 80 characters **Graphics and sound:** None **Ports:** RS-232, parallel, cassette, system bus **Modem:** Built-in 300 baud **Dimensions:** 11.8" x 8.4" x 2.8", 4.7 lbs. **Documentation:** User's Guide, 3 applications software manuals, 72-page quick reference guide **Options:** Add-on memory cartridge, micro floppy disk drive, CRT adapter, 1200 baud modem **Summary:** Compact AC or battery-operated portable with CP/M, word processing, spreadsheet, telecommunications, and card filer software built in **Price:** $999

Manufacturer: NEC Home Electronics (USA)
1401 Estes Ave.
Elk Grove Village, IL 60007
(312) 228-5900

Compact Package

Somewhat larger and heavier than the 8201, the 8401 measures 11.8" x 8.4" x 2.8" and weighs 4.7 lbs. It uses a CMOS version of the 8-bit Z80 mpu operating at 4 MHz. Built in are three 32K ROMs (96K total) which include the BIOS and applications software. The 64K of RAM is segmented into two 32K blocks, one for storing user programs (called an internal RAM disk) and the other for file creation and manipulation. With an optional floppy disk drive attached, it is possible to allocate all 64K of the computer to program execution.

A compartment in the top of the computer accepts four C-cells; alkaline batteries are said to have a life of eight hours or longer. There is an automatic power shutoff if no key has been pressed for ten minutes; this time period may be reset by the user to 1 to 25 minutes.

Going around the outside of the case, we find a power switch, screen contrast adjustment, reset switch, telephone and modem connectors, 300/1200 baud switch, and RS-232, parallel, cassette, and bus connectors. LED indicators on the top indicate low battery condition and sleep mode. Franky, we couldn't see much use for the sleep feature since when the machine "wakes up" it simply displays the menu and cannot be instructed to execute a program automatically (such as sending a file late at night to another computer).

The keyboard has 59 regular keys, five function keys (which double to ten with the Shift key), and four directional

Photography by Jeff MacWright.

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CIRCLE 113 ON READER SERVICE CARD

cursor keys (arranged in a convenient diamond pattern). A numeric keypad can be toggled on and off with the NUM key, while the ALT key toggles on an alternative keyboard which includes 28 Greek letters, 17 math symbols, and 38 graphics symbols. While it's nice to know that they're there, it is not at all clear how these symbols can be used. Although a bit noisy, the keyboard has an excellent feel and a sensible layout.

We are less enthusiastic about the display, however. It measures 7.5" x 2.4", the same width and only 0.4" higher than the one on the 8201 (and Tandy Model 100). This means that nearly four times as many letters are packed into the same screen size as the previous machine. Characters are formed in a 6 x 8 dot matrix; to enhance legibility, vertical strokes are wider than horizontal ones. Nevertheless, one pixel vertical and horizontal spacing coupled with one pixel descenders occasionally makes for difficult reading. Far worse is the fact that the screen tilts back only 30 degrees from the vertical. While this is plenty for a CRT screen, an LCD screen requires reflected light. Thus if you are depending upon overhead illumination you will be disappointed with the results and may want to consider a table or desk lamp positioned to illuminate the screen.

The Big Four In Software

Wordstar-To-Go by MicroPro International is a scaled down version of the full-blown *Wordstar*. The main features which have been left out include: help menus, file directory (you use the 8401 menu), paragraph tab, hyphen help, soft hyphen entry, column mode, decimal tab, and print control display toggle. Beyond that, the 8401 runs standard *Wordstar* with all its facilities and foibles. Because it automatically stores both a working copy and a backup of every document created, it gobbles up memory faster than you can imagine.

Like its big brother, *Wordstar-To-Go* is not particularly easy to learn or easy to use but it has nearly every imaginable word processing feature, allows embedded printer control instructions, takes advantage of the 8401 function keys, and comes with MicroPro's 200-page manual. Thus, it gets our reluctant endorsement.

Calc-To-Go is a first class spreadsheet program that includes the most frequently used features from spreadsheet programs for larger computers. Expressions can use all the standard arithmetic and logic operations as well as MAX, MIN, SUM, AVG, and COUNT. Limited logic functions, including IF, AND, OR, NOT, TRUE, and FALSE are implemented. LOOKUP will search a range for a value, and CHOOSE will return the value of the nth cell in a range. Rows and columns can be inserted and deleted, but not moved. Formats can be applied globally or to individual rows, columns, or cells. Column widths can be set globally or individually—a feature lacking in many larger spreadsheet programs.

A *Calc-To-Go* spreadsheet can theoretically contain as many as 16,384 cells (64 columns x 256 rows) although with only 32K of working memory, it is unlikely that a spreadsheet with more than 4000 cells could be constructed (which should be plenty large for most problems).

If you want the big four in software—word processing, spreadhseet, database, and communciations—in a portable machine you can have them all at a surprisingly modest price.

Filer is a card filing program that lets you design your own form for a file card and then use it to store and retrieve data. A file card can consist of up to 13 lines with a maximum of 80 characters per line. The maximum size of a card file is 23K; this would be filled by 55 cards with 10 lines of 40 characters per line. Thus, it is important to design your card judiciously.

Once you have created a file, you can add data or cards; retrieve a card (based on any rules you specify); delete, view, sort, or print cards; and even have the computer dial a telephone number from a card. (As mentioned earlier, in addition to an external modem, a connector is provided for a standard voice telephone.)

The *Telcom* program has two main functions: connecting to an on-line data service (Compuserve, The Source, Dow Jones, OAG, etc.) and connecting to another computer. The manual provides specific instructions for communicating with an NEC 8800, IBM PC, or Apple II, although the 8401 can easily be connected to other computers as well. The *Telcom* program is completely menu-driven and allows manual, partially automatic, or completely automatic operation. *Telcom* can be used for voice operation as well as data transmission.

Optional Extras

A 32K RAM cartridge, which plugs into the left side of the computer, is available. This is similar to the one offered for the 8201, and at 7 oz. is the most portable type of add-on memory.

The micro floppy drive provides more memory (328K per 3 1/2" disk) but requires the drive (7.7 lbs.) and CRT/Disk adapter (1.1 lbs.). On the other hand, this latter component provides monochrome or RGB color output to a monitor. Moreover, the computer provides true VT100 terminal emulation should you need it.

Although a 300 baud direct connect modem is built in, a 1200 baud external unit is also available.

The Notebook Computer of Choice?

So is the NEC PC-8401A the notebook computer of choice? As we have said so many times in the past, it depends upon your needs and expectations. Our main criticisms are the limited screen angle (can be remedied with a lamp), less than friendly *Wordstar-To-Go*, and—one thing we haven't mentioned—the lack of a programming language. Perhaps we are just old-fashioned in thinking that a computer ought to be programable.

"But," you're thinking, "the computer uses a Z80-type mpu and runs CP/M; surely Basic is available as an option." No it isn't. At least not yet. Presumably if there is sufficient hue and cry, NEC could release it in the future. Nevertheless, if you are looking for a machine on which to write Basic programs right now, look elsewhere.

On the other hand, if you want the big four in software—word processing, spreadsheet, database, and communications—in a portable machine, you can have them all at a surprisingly modest price. Moreover, with the options, the 8401 offers close to real desktop computing power and, for some, may meet the need for a true dual purpose computer (desktop and portable).

For the 8401 to be a big success for NEC, we think the company will have to face up to two major issues: improving distribution and developing vertical markets, but that's a story for another place and time. ■

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— FAMILY COMPUTING

HOMETEXT WORD PROCESSOR.
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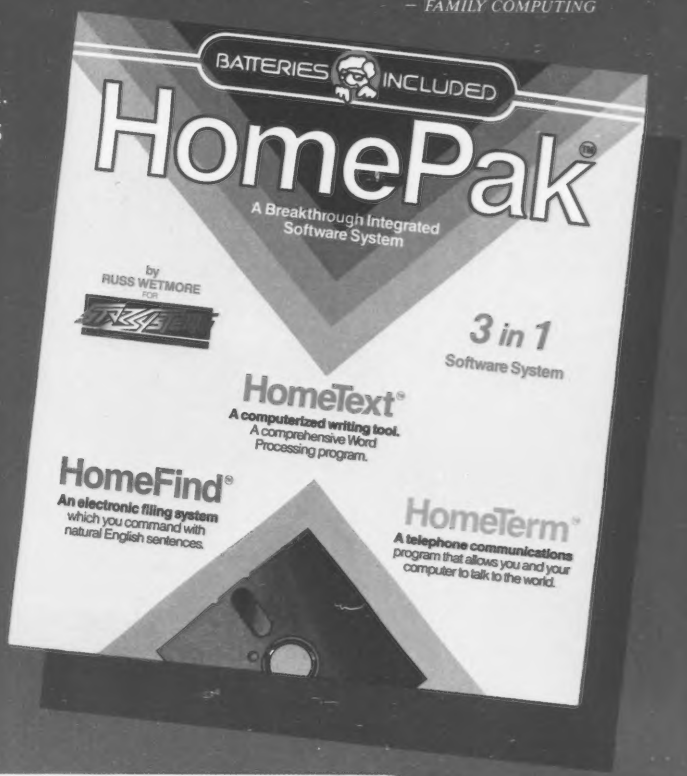
Together they are **HomePak**: the three most important and most useful home computer applications in one integrated system — on one diskette!

The reviewers are unanimous: any one of these programs **alone** is well worth the price. So you're getting **three times the computing power**, with this exceptionally easy to use package:

- **all commands in simple English; no complex computer jargon, no obscure instructions**
- **all key commands are immediately available on the screen menu; additional commands can be called up for the more experienced user**
- **to help you, system status is displayed right on the screen**

And it's easy to use the three programs together. For example, in the "Merge" mode, you can take data stored in HOMEFIND and print letters and labels using **HOMETEXT**. Or, use **HOMETEXT** to write reports based on information you've called up via **HOMETERM**.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An electronic filing system which you command with natural English sentences.
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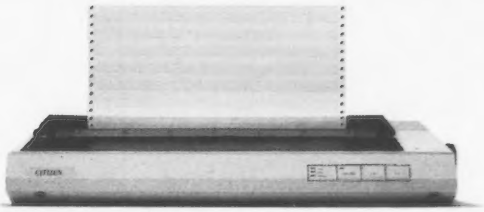

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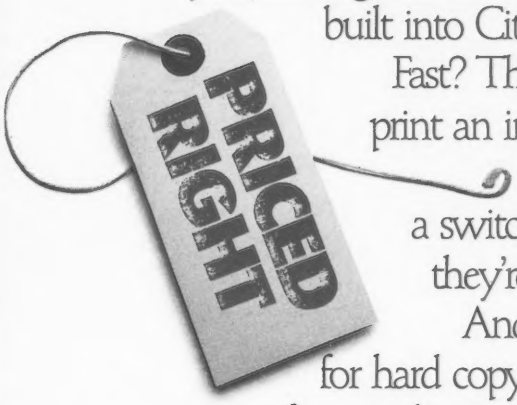

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CIRCLE 104 ON READER SERVICE CARD

SCRG PRODUCTS FOR THE APPLE COMPUTER

SWITCH-A-SLOT

$179.50

The **SWITCH-A-SLOT** is an expansion chassis, which allows the user to plug in up to four peripheral cards at one time. One of these cards is selected for use, and only that card draws power.

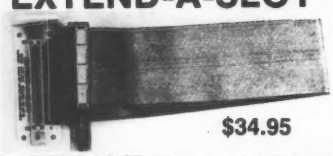
This product is especially useful where the software requires the printer to be in a particular slot, and the user wishes to choose between two or more printers.

- Allows up to four peripheral cards to be plugged into one peripheral slot.
- User selects desired card by front panel rotary switch.
- Only selected card draws power.
- Plugs into any peripheral slot.
- Saves wear and tear on delicate connectors.
- 18" cable connects Switch-a-slot to computer.

New—resistive terminations for better response

SWITCH-A-SLOT and EXTEND-A-SLOT work well with all slow to medium speed cards, such as Modems, Printers, Clock, 80 Column, Music, etc. They are not recommended for high speed data transfer devices such as disk drive controllers, alternate processor, and memory cards. These products may be incompatible with some alternate processor cards.

EXTEND-A-SLOT



$34.95

The **EXTEND-A-SLOT** brings a slot outside your APPLE™, allowing an easy change of cards. The 18" flex cable is long enough to allow placement of the card in a convenient location. The high quality connectors are gold plated for reliability.

The perfect accessory for:

Owners of large numbers of I/O expansion cards—keep your frequently used cards installed. Use the EXTEND-A-SLOT for the others.

Technicians—easy access to test points on accessory cards under actual operating conditions.

Experimenters—make easy changes to cards while card is installed.

EASY TO USE—just plug it in as you would any expansion card, then plug your card in. When you want to change cards, do it easily outside the computer, without the wear and tear on the computer expansion slot.

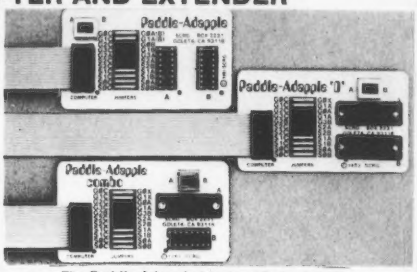
OTHER PRODUCTS

D Manual controller. Gives complete control over the $C000 through $C0FF range in hardware. Can be switched while program is running. $89.50.

MAGIC KEYBOARD (for][or][+ only). Re-encodes the keyboard to give alternate keyboards, such as DVORAK, ASK, 10-KEY, HEXIDECIMAL KEYPAD, etc. $49.50.

Paddle-Adapple

GAME I/O ADAPTER AND EXTENDER



- Works with all Apple compatible joysticks, paddles and other I/O devices.
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- Use 4 paddles simultaneously.
- Unique "Jumpers" socket allows you to configure to meet your needs.
- BPI™ users can have BPI™ device and paddles plugged in simultaneously. (**Paddle-Adapple** and **Paddle-Adapple Combo** only)
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- Exchange X & Y joystick axis.
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- All Strobes, annunciators and power available on all 16 pin connectors.
- Supplied with 18" cable.

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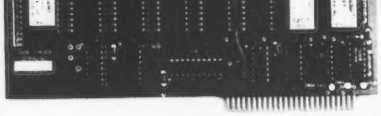
The **Paddle-Adapple** has two 16 pin sockets

The **Paddle-Adapple "D"** works with the subminiature D connectors.

The **Paddle-Adapple Combo** has one 16 pin socket and one subminiature D connector.

quikLoader™



FAST AND CONVENIENT

The quikLoader is the *fastest* way to load programs. **BAR NONE!** Programs can be loaded in fractions of a second. More importantly, DOS is instantly loaded every time the computer is turned on. Integer is even loaded in the language card. This process takes less than a second, saving valuable time. Frequently used programs are available *instantly* when you need them, without having to look for the disk, or hoping that the lengthy disk loading procedure goes smoothly.

To run a program from the quikLoader, bring up the quikLoader catalog (Q-reset), and the names of the programs will be displayed, along with an index letter. Pressing the index letter will instantly load and run the program.

Up to 23 programs on the quikLoader can be displayed on the screen at one time. If you have more programs, you may scroll through the catalog in either direction.

The quikLoader is **ideal** for applications requiring a dedicated computer. Your program can be automatically loaded and run at "power-up".

PROGRAMMING EPROMS

Putting your own programs on the quikLoader is easily done, using a separate EPROM programmer such as the **PROmGRAMER.** For APPLESOFT, INTEGER, or single machine language files, no programming knowledge is necessary. You **will** need experience if you want to save copy-protected or complex programs. The amount of experience necessary depends on the complexity of the program.

COMMERCIAL PROGRAMS

If you have a program that is valuable, it will become **more** valuable when it is instantly available to you. We are actively seeking licenses from software publishers to allow their popular programs to be made available for the quikLoader. Independent authors are encouraged to write programs suitable for the quikLoader. If the author wishes, we will market the program (with appropiate royalties), or the author can take care of all marketing. In either case, we will make known to our customers the availability of these programs.

We start your library of programs with the most popular utilities on the card, FID and COPYA. Now, if you have to copy a disk, you don't have to search for the master disk. You can start copying within 3 seconds after turning on the computer.

We are currently licensed to sell several very popular programs on EPROM. **DOUBLE—TAKE** by BEAGLE BROS., and **COPY][PLUS** by CENTRAL POINT SOFTWARE. The introductory price for DOUBLE—TAKE is $45.00. This includes the program exactly the same as you would buy it at your dealer for $34.95 (including disk and documentation), and a programmed 27128 EPROM (worth about $25.00). COPY][PLUS cost $65.00. This includes the original program (worth $39.95) and **two** programmed 27128's.

Other programs available directly from us or the publishers are, **BARKOVITCH I/O TRACER AND SINGLE STEP TRACE, MICRO/TYPOGRAPHER** from **TIDBIT SOFTWARE, ECHO** speech synthesizer software from **STREET ELECTRONICS,** and **MERLIN** assembler, from **ROGER WAGNER PUBLISHING.** More commercial programs are now in the works.

MEMORY CAPACITY

The quikLoader has eight sockets for EPROMs. These sockets can accommodate standard EPROMs from 2716 to 27512. These types can be freely intermixed. The memory capacity of the quikLoader depends on the EPROMS used. For example, the 2716 can hold 2K of programs, and the 27512 can hold 64K. (Frankly, the current costs of the 27512 is prohibitive,but should come down drastically in the next year.) At this writing, the least cost-per-bit is provided by the 2764, which can hold an 8K program. Using these "chips", the quikLoader becomes a 64K ROM. Using larger capacity EPROMs allows it to become a 128K, 256K, or even a 512K card. If more memory capacity is needed, the quikLoader operating system supports multiple quikLoaders.

INCREASED DISK CAPACITY

Since DOS is loaded from the quikLoader every time the computer is turned on, it is not necessary to take up valuable disk space with DOS. This will give you more than 5% additional space for programs and data on your disks.

ABOUT THE DESIGNER

The quikLoader was designed by Jim Sather, author of UNDERSTANDING THE APPLE][(forward by Steve Wozniak), published by QUALITY SOFTWARE (21601 Marilla Street, Chatsworth, CA 91311 (818) 709-1721).

SYSTEM REQUIREMENTS

The quikLoader plugs into any slot of the APPLE][+ or //e. If used in a][+, a slightly modified 16K memory card is required in slot 0. A disk drive is required to save data.

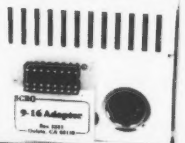
DOS, INTEGER BASIC, FID, and COPYA are copyrighted programs of APPLE COMPUTER, INC. licensed to Southern California Research Group to distribute for use only in combination with quikLoader.

$179.50

NEW 9-16 Adapter

For Apple / /e and / /c

This product permits the use of most 16-pin I/O devices with the APPLE //c or //e. By plugging this adapter into the sub-miniature 'D' connector, you can plug in a 16-pin device, such as the Paddle-Adapple, paddles, joystick, KOALA PAD™, etc. The only limitations are those devices that use the annunciators or the C040 strobe, such as the POWER PAD™. Please note that the //c does not support four joystick inputs.



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PROmGRAMER™

The **PROmGRAMER** will read or program any of the standard single-volt EPROMS from the 2708 to the 27512. Features include:

- Slot independent operation for the APPLE // family of computers.
- Zero insertion force sockets accepts 24 or 28 pin devices.
- Disk based software allows easy customization of software.
- Complete instructions for loading software into quikLoader.

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CIRCLE 142 ON READER SERVICE CARD

INDUSTRY INSIDER

continued from page 14

Hackers Get Together

It was a weekend to remember. Of 500 well known hackers invited by Stewart Brand to a "conference," 150 or so showed up at a former Army base north of San Francisco the weekend of November 9-11, 1984. The weather was chilly and rainy, but the camaraderie was warm, and the intellectual dexterity was dazzling.

The conference got off to an eerie start on Friday night when the power failed throughout the camp. The opening "mapping" session when each attendee stood up to give his name and interests was lit by lantern and flashlight. As one person said, "It looked like an EverReady commercial."

On the other hand, it sounded like a highly-charged science fair punctuated with offbeat humor, cackling laughter, intellectual commentary, and fanatic commitment to the cause of computers and pure hacking.

The second day was given to fooling around with dozens of computers and passionate discussions about computer design, programming, and broadening access to computers for youngsters. Bob Albrecht recalled the days of People's Computer Company, an open-to-the-public center in Menlo Park in the Early 1970's while Brian Harvey proposed starting a string of similar centers today that youngsters could join "like the YMCA."

The final session of the conference, held in an old wooden army chapel, was where the hackers were most successful in explaining the meaning of the gathering. Steve Wozniak said he thought the hacker drive "represents the children in us." However, the words used over and over again were "a sense of community."

Ted Nelson, author of the 1974 classic, *Computer Lib/Dream Machines* and former editor of *Creative Computing* perhaps summed it up best. He said the gathering reminded him of the 1969 Woodstock Rock Festival. "The great thing about Woodstock," he said, "was that you and 500,000 other people were where it was at, and nobody else was . . . This has been the mellowest, pleasantest computer gathering I've ever been at, because we were all so glad to be here." Hacker after hacker followed to speak of the need to keep the spirit of the conference alive. With the hackers' eclectic mixture of strangeness, wit, intellect, contentiousness, and camaraderie, it seems to me the spirit will be alive and well for many moons to come. ■

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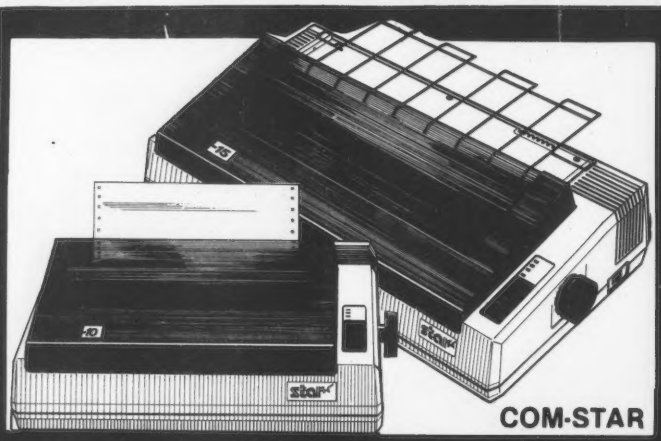

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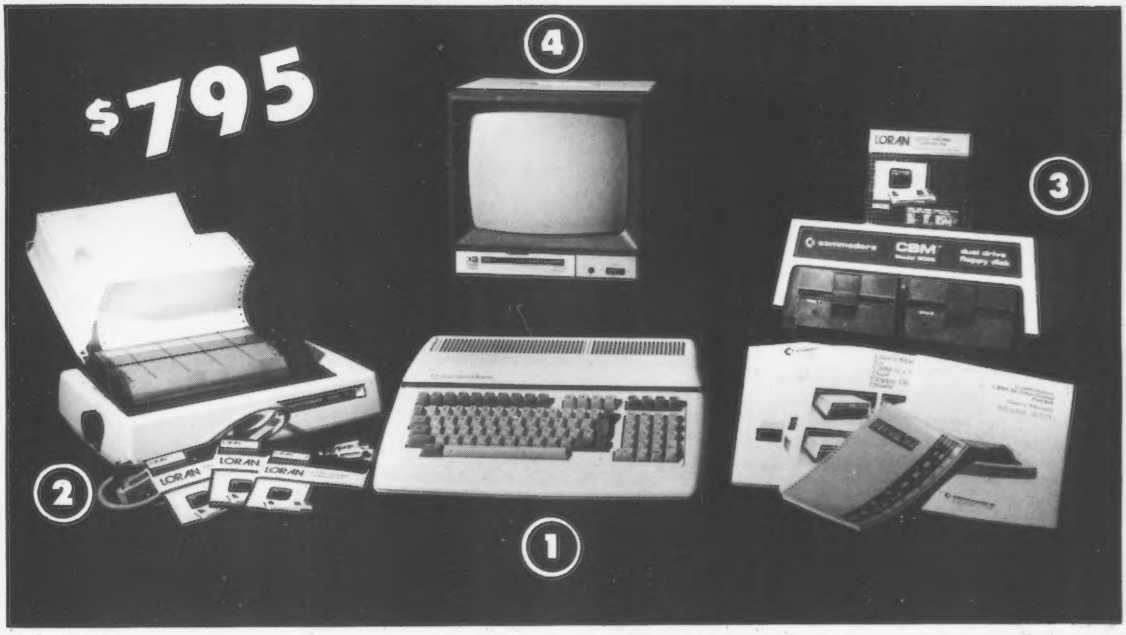

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CIRCLE 132 ON READER SERVICE CARD

Portable Disk Unit for NEC 8201

David H. Ahl

The NEC PC-8231A is a portable single or dual 3 ½" disk drive unit for the NEC PC-8201 notebook portable computer. The unit can be powered by either a rechargeable battery or AC adapter and provides true portability, assuming you don't mind its arm-stretching weight of 7.8 lbs.

The unit measures 11" x 10.5" x 3" and sports a collapsible carrying handle on the right side. The battery (or AC adapter) fits in a slot on the left side. At over 7" long and with a weight of 1.5 lbs., the 12-volt, 1.5-ampere hour battery is a bit of a monster. Depending on disk accesses, it should have a life of about 1 to 1 1/2 hours, while recharge time is two to three hours. Using the included connector block, the AC adapter doubles as a battery charger.

In operation, the protective front of the disk unit folds down and elevates the drive by about 1 ½". On the front is a power switch, green LED power indicator, drive door, and red LED drive access indicator. Once the drive has been accessed, it continues to spin for several minutes to speed subsequent accesses.

Getting More Storage

At the outset I should point out that we were at a bit of a disadvantage in testing this product, as we had a prototype unit from Japan with no documentation whatsoever.

The disk unit is connected to the computer with an eight-conductor cable with modular telephone-type jacks. After powering up the first time, pressing the reset button on the computer automatically loads the Disk Basic overlays. Once loaded, they are retained in memory unless you turn off the battery backup power. These routines occupy 3035 bytes; thus a 32K machine (which actually has 28758 free bytes) will end up with 25723 free bytes.

Disk operations are available from Basic or the main menu (for text files). To save a text file from the main menu, for example, you would press function key 2. In response to the prompt "Save File.DO as" you would respond, "1:File.DO" and the file would be written to disk. The LOAD and KILL commands are also usable from the main menu.

Hardware Profile

Name: PC-8231A Portable Disk Drive
Description: Add-on disk drive for NEC 8201 computer **Type:** One or two 3 1/2" drives **Capacity:** 250K plus per disk (see text) **Power:** Rechargeable battery or AC adapter **Dimensions:** 11" x 10.5" x 3", 7.8 lbs. **Summary:** Speedy storage for Text or Basic files in a compact unit **Price:** $799
Manufacturer:
NEC Home Electronics (USA)
1401 Estes Ave.
Elk Grove Village, IL 60007
(312) 228-5900

It took me a good deal of time to determine how to get a disk directory; it turns out the command is FILES (1). Unfortunately, it appears that there is no way to print a directory; hence, if you have more than 12 files (the number of names that fit on the screen), you must read fast as the first ones scroll by.

The system disk contains three programs: Format (formats a blank disk), Backup (creates a backup disk), and Xfies (transfers files from one disk to another). I also had a demo disk with seven additional programs for checking the system and the like; none of these programs are essential to system operation. In fact, I judge them somewhat dangerous since they use many POKEs, and at least two of them hung my computer so thoroughly that I needed to cold start the machine.

A formatted data disk has 158 free blocks of 2K each to give it a total storage capacity of 323K. A system disk has a capacity of 307K. These figures are a bit misleading since the system assigns disk space in 2K increments. For example, a 4200-byte program (106 bytes larger than two 2K blocks) requires three blocks (or 6144 bytes) of storage space. Thus, the realistic capacity of a disk is probably more like 250K (which still is a great deal of space compared to the internal memory of the machine).

Using the disk from Basic is quite simple; disk file names are simply preceded by 1:. Other commands that can be used are DSKF(1) (gives free space on disk), DSKO$ (writes data on disk), and DSKI$ (reads data from disk). These latter commands are used in conjunction with the file commands OPEN, CLOSE, and FIELD.

Worth the Price?

My only complaints with the 8231 are its arm-stretching weight and its inability to print a file directory. Functionally, it behaved perfectly, and my ability to use it *sans* instructions is testimony to its ease of use.

If the 8201 is your only computer and you find yourself running out of memory space for long text files or constantly saving programs on cassette tape, the 8231 disk drive will be a most worthwhile addition to your system. Also, if most of your travel is by car or if you stay in one spot for a while when traveling, the weight of the drive will not be a major factor and you will want to consider getting one. On the other hand, if you use your 8201 primarily in conjunction with a larger desktop machine, you may find that the $799 price tag on the 8231 means "not worth it for me." ■

CIRCLE **403** ON READER SERVICE CARD

Photography by Jeff MacWright.

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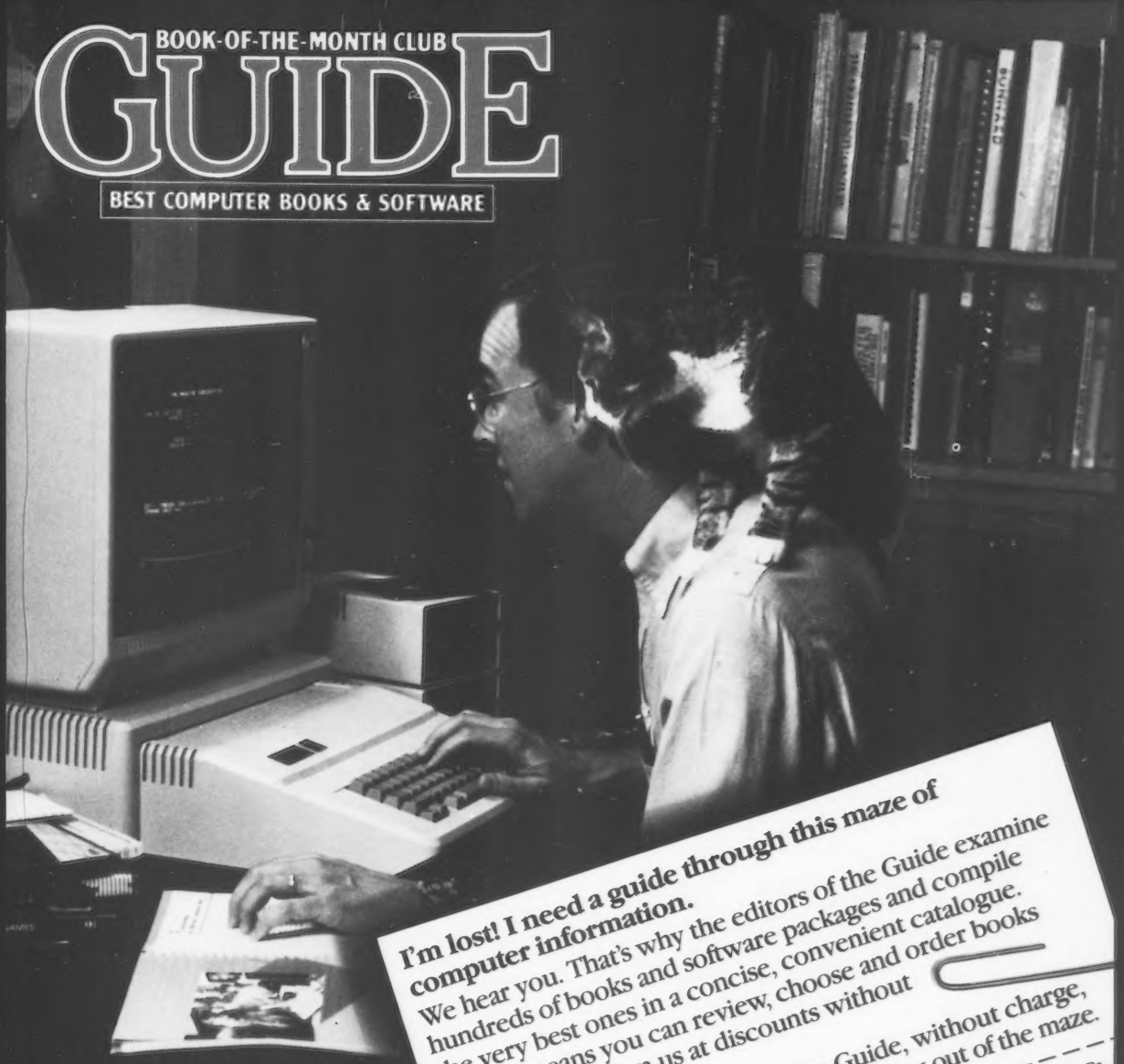

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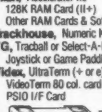

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A 25-line screen and 5 1/4" disk drive set this machine apart in the portable computing derby

Datavue 25

David H. Ahl

The Datavue 25 is a compact IBM PC compatible computer with a full 25-line by 80-character LCD screen, 5 1/4" disk drive, and detached keyboard. Power can be supplied from either a rechargeable battery or AC outlet. This Japanese-made machine has serial and parallel interfaces, and a lengthy list of options including add-on memory, disk drives, modems, printer, and various cables. At a price of under $2200, the machine represents a most interesting entry in the portable market.

Photography by Jeff MacWright.

How Compatible?

Back in the old days (before the IBM PC), we recommended that a computer system be selected based on functionality, reliability, and support. In other words, does it do the job you had in mind, will it continue to do it, and when it doesn't, is there a place to turn for help? Come to think of it, we still think this is the way to select a computer system.

Unfortunately, as we read reviews in other magazines and talk to computer purchasers, computer store managers, and even manufacturers, the feeling we get is that the only thing that matters today is IBM PC compatibility. Hence, we thought we would dispense with the question of how compatible the Datavue 25 is and move on to the more interesting aspects of the machine. So how compatible is this machine with the IBM PC? Not very. At least the early version we had wasn't. We understand the BIOS is undergoing further revisions, so things may well improve.

We found a curious mixed bag of software that would run on the Datavue 25. Either DOS (1.1 or 2.0) loads, but neither IBM Basic loads; Compaq Basic does, however. One of the "acid test" packages, *Lotus 1-2-3*, runs fine, except for the graphics which do nothing. On the other hand, *Ms. PacMan* and other programs using graphics load and run flawlessly. *Electric Pencil*, no problems; *WordStar* (IBM PC version), no way. For the most part, we found that Compaq software would run, while packages for the PC, TI Pro, and other compatibles wouldn't. Frankly, we can't recall seeing a machine with a more unusual mixture of software packages that would and would not run. Which evokes our usual caveat: make sure the machine runs what you want to use before you buy.

That being said, let us also reiterate our opinion that a computer ought to be judged on its own merits, rather than its degree of IBM compatibility. And the Datavue 25 has a great many merits indeed.

Hardware Profile

Name: Datavue 25 **Type:** Portable PC compatible computer **CPU:** 80C88 at 4.8 MHz **ROM:** 16K (BIOS and diagnostics) **RAM:** 128K (expandable to 640K) **Disk Drive:** 5 1/4" 360K single sided **Keyboard:** 83 full-stroke keys, infrared coupled **Display:** LCD, 25 line x 80 characters (8.8" x 3.8") **Ports:** One parallel and one serial **Dimensions:** 13" x 10.4" x 6", 15.2 lbs. (with battery pack) **Documentation:** Operations, MS-DOS and Basic manuals **Summary:** Interesting portable computer with 25 lines LCD screen and 5 1/4" disk drive **Price:** $2195 for 128K version, $2795 for 640K

Manufacturer: Datavue/Quadram
225 Technology Park
Norcross, GA 30092
(404) 449-5961

Compact Package

Buttoned up, the Datavue 25 measures 13" x 10.4" x 6". The spec sheet says it weighs 12.1 lbs.; sorry, guys, but our "USPS certified" digital scale says 13.68 lbs. The battery weighs another

1 1/2 lbs for a total arm-stretching weight of 15.2 lbs. It has a comfortable fold-up/down handle for carrying which makes it seem lighter than four Model 100's even if it isn't.

The detached keyboard pops out of the front of the case and has two small folding legs which prop it up at a comfortable typing angle. The keyboard communicates to the computer by means of an infrared beam powered by two akaline AA batteries. Each keystroke produces a flash of a red LED on the top right of the keyboard. Since one would clearly not be watching this while typing or entering data, we presume it is there for occasionally checking the batteries.

Just as real men don't eat quiche, we suspect that real men prefer to use real wires to connect their computer components. For those who do so prefer, an optional cable is available. Since it wasn't available to us, we used the infrared link—with surprisingly excellent results. In fact, we found the keyboard could be at nearly right angles to the system unit and tilted 60 degrees toward the floor, and still pass a signal. About the only "natural" working posture that would trip it up is leaning way back in a chair with the keyboard on your lap.

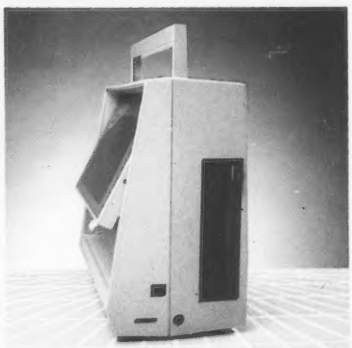
The keyboard has 83 full-stroke keys including ten function keys shaded dark gray. It has a reasonably good feel, although the keys seem to want to bounce back to their rest position. That is not to say that there is any keybounce—there isn't—but it is as though you are being constantly reminded that the key wants to return home as soon as possible.

Because of its compact size, the arrangement of keys is somewhat different than a desktop computer or typewriter. A numeric keypad (which doubles as cursor control keys) is at the top right of the keyboard; INS, DEL, and PRT SC are at the bottom right; and various other keys are in odd places. On the other hand, the ENTER key is triple size (hard to miss), F and J have raised dots to aid hand positioning (the 5 on the keypad does not!), and most of the special function keys have reasonably complete keytop labels.

Unfortunately, the cheap look of the keyboard belies its excellent behavior. Perhaps this is because of the dark background that can be seen between the keys or the irregular gap between the spacebar and edge of the casing, but it just does not project an image of quality.

The system unit, on the other hand, appears to be rugged and well made. On the right side is a 5 1/4" floppy disk drive. A positive action latching button clamps the disk into the drive thus obviating the need for a flimsy fold-down door or vulnerable rotating handle (anything on the outside of the case of a portable computer is vulnerable).

Also on the right side is a recessed reset button and contrast adjustment for the LCD screen. Proceeding around to the rear of the unit, we find a rocker



Right side of machine houses 5 1/4" disk drive. Numeric keypad doubles as cursor control keys.

power switch, serial and parallel ports (both using DB-25, RS-232 connectors), and two covered connectors, one for an external floppy disk and the other to the system bus.

On the left side is a covered opening (4.7" x 3.3" x 1.4") which will accept an optional modem while another cover allows access to the memory board. A third opening accepts either a battery or an AC adapter. The battery is said to have a 1 1/2 hour life (depending upon disk activity), although the manufacturer is working to extend this time. The AC adapter doubles as a battery charger with the assistance of a 3" wire clip. A full recharge takes about three hours.

Here's Looking At You

The LCD screen may be tilted forward to six detent postions ranging from 5 to 57 degrees; we found the third position (about 30 degrees) was most satisfactory. Coupled with the contrast control (actually tilts the liquid crystal elements), the screen tilt allows excellent visibility in a wide range of room lighting conditions.

All 25-line by 80-character LCD displays are not created equal. The Data General/One uses a display with the same proportions as a CRT screen. Unfortunately, with a screen of that height, it is difficult to adjust the viewing angle so the entire screen is equally visible. However, the Datavue 25 uses a screen with quite different proportions than a CRT; it measures 8.8" wide by only 3.8" high (about two-thirds the height of a normal CRT screen). As a result, the Datavue screen offers much better visibility than that of the DG/One.

Naturally, there are always design tradeoffs in a display. In this case, the designers have opted for one pixel of space between lines of text and one pixel descenders on the five nasties (g, j, q, p, and y). For the most part, text is quite readable, but occasionally, you have to look twice at certain blocks of text where one line seems to melt into the next.

The Heart of the Matter

The heart of the Datavue 25 is a 16-bit 80C88 (a CMOS 8088). It is equipped with 16K of ROM containing the BIOS and diagnostics. The basic machine comes with 128K of RAM, expandable to 640K (using 256K chips) and single floppy disk drive with 360K capacity.

Clock rate of the mpu is 4.8 MHz—the same as most PC compatibles. It ran our standard Basic benchmark in 16 seconds, about the same as the Compaq, TI Pro, and Sharp PC-5000, and 20% faster than the DG/One.

When the machine is fired up, a screen appears in which you use the arrow keys to set the amount of memory, if any, to be devoted to a RAM disk. This RAM disk is automatically formatted to meet DOS 2.0 standards, but may be reformatted if you wish. If you set up a RAM disk, it can be used like an ordinary floppy drive for saving programs and data. However, if you save something vital to RAM disk, you must remember to transfer it to a regular disk before powering down as the memory of the machine is volatile. Following this RAM disk memory allocation operation, the normal MS-DOS prompts appear.

At startup—or any other time during a session—you may set several other functions. These include audio feedback

for key presses (annoying to some, reassuring to others), screen reverse, and changing the default drive. You can also check the battery level at any time.

The Datavue 25 also has a built-in real-time clock with an internal battery backup. Thus, once the date and time are set, it should be unnecessary to set them upon power up, although for some reason this function didn't work on our test machine.

No Frills

We had an early Datavue 25 for evaluation; thus there are likely to be some updates and minor changes on the machines that will appear on dealer shelves in the early spring. We are told that the machine will come with DOS 2.0 (or possibly a later version), GW Basic (probably), an operations manual, and the standard Microsoft DOS and Basic manuals. The basic hardware package will include an AC adapter, battery pack, and charger cable. The list price of a 128K system is $2195, and a 640K model goes for $2795. If that sounds cheap for CMOS memory, it is because it isn't CMOS, it is garden variety DRAM (dynamic RAM).

Coming down the pike later this spring will be an add-on floppy disk drive which clamps to the rear of the unit, totally external disk drives, 300 and 1200 baud modems, a lightweight portable printer, an automobile battery adapter, and an assortment of cables.

Just as real men don't eat quiche, we suspect that real men prefer to use real wires to connect their computer components.

Quadram tells us that the machine will be available through retail computer stores (those handling other Quadram products) and through VARs, OEMs, and system houses.

So where does the Datavue 25 fit in the market? Frankly, we are not sure. The upper end of the portable market has proved to be softer than most analysts and manufacturers forecast. Even the low end hasn't done as well as many people expected. So here is a new mid-range computer. Yawn.

But we think there is a better scenario. The Datavue 25 is not a breakthrough or wildly exciting, but maybe that is its strength. Here is a good, solid value from some good, ol' boys in Georgia (aided by their friends at Sotec in Japan). Quadram and their parent, the Intercolor Group, have been around a while. They have weathered a few storms. In New York, one might say they're street smart. They have a good in with retailers—far better than many other computer makers—and theirs just may be the system that retailers will push.

There is no question about it; many things must come together for this—or any other computer—to be a success today. In this case, we think the raw ingredients are there; now it's a matter of making them into a cake. As for me, I'd be happy to find a Datavue 25 on my desk. ■

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Corey Sandler

With an intriguing state-of-the-art electronic technology, the IBM Quietwriter Printer lives up to its name: It is *quiet* beyond expectation, and it is a *printer*, producing type that requires a second or third glance to distinguish it from the output of a fine carbon ribbon typewriter.

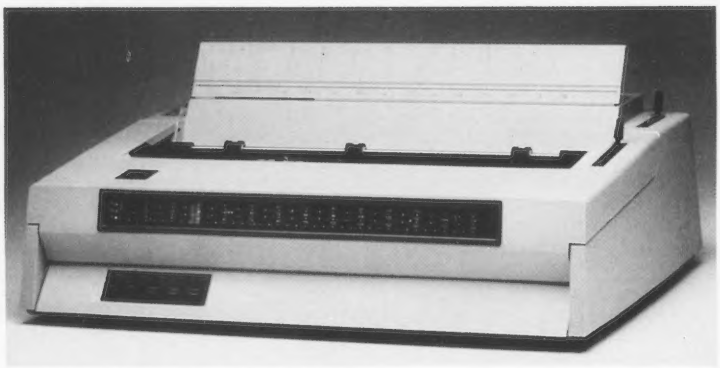
The Quietwriter is a speedy electronic paintbrush for the office, combining handsome user-changeable text characters with the full IBM PC graphics set. The printer is based on a new thermal transfer technology that uses a 40-electrode printhead and a single-use four-layer resistive ribbon. IBM claims a burst speed of 40 to 60 cps, depending upon selected character pitch; in tests for this review, the printer turned in speeds of 23 to 26 cps at 10 pitch for a typical page of business correspondence.

Although designed to work with the IBM PC family of computers (the PC, PC XT, Portable PC, 3270-PC, PCjr, and PC AT) the printer should work quite well with any computer that has a standard Centronics parallel interface. The unit is priced at $1395 at IBM Product Centers and is also available through dealers.

The noise of the printer is barely noticeable as it tracks from left to right; the return of the unidirectional head to the left margin sounds like the whispered call of an asthmatic duck. According to IBM, the sound output of the unit is 53 dBA; by comparison, the Qume Sprint 11/55 Plus Daisywheel printer is 10 times louder, at 63 dBA; the NEC Spinwriter 3550 roughly five times as loud at 60 dBA.

Using a Shannon Text printing speed test developed by Tom Badgett of *Computers & Electronics* magazine, I found output in the range from 21 characters per second (for 25 short, varied-length text lines) to 26 characters per second (for 10 fixed-length 80-character text lines). The average over several tests of differing types was 23 cps. The tests were conducted using the standard 10 pitch Courier font; using a more-dense 12 pitch font should increase speeds by about 20%.

Those speeds, of course, do not compare to the fabulous ratings turned in by some of the latest dot matrix printers; however, if print quality is the primary concern, the IBM unit offers a tremendous price/efficiency combination for letter quality output.



The IBM Quietwriter Printer lives up to its name.

Hardware Profile

Name: IBM Quietwriter Printer **Type:** Printer **Ports:** Requires parallel interface
Documentation: IBM Guide to Operations **Summary:** It is a quiet, impressive new printing technology that gives yet another meaning to letter quality matrix printing
Price: Base price $1295
Manufacturer: IBM Information Systems Group
900 King St.
Rye Brook, NY 10573
(914) 934-4488

The printer includes two cartridge slots for plug-in font modules. The printer can switch back and forth from either set while printing, and can also pause for manual change of cartridges. (A companion device, the $1295 Quietwriter 7 typewriter, can also be linked to a computer, although it will not produce the extended graphics set.)

New Technology

The resistive ribbon technology differs significantly from other thermal transfer printers now on the market in that the heat is generated in the ribbon

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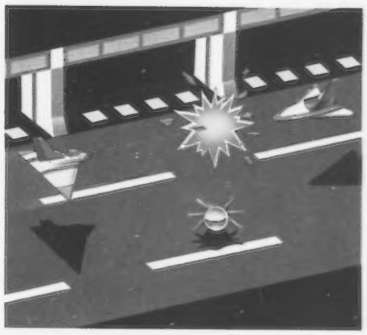

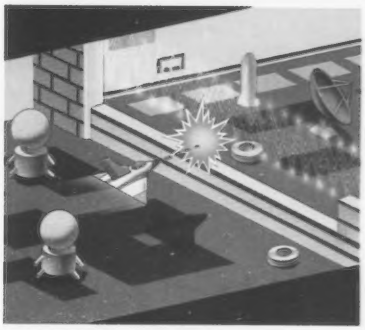

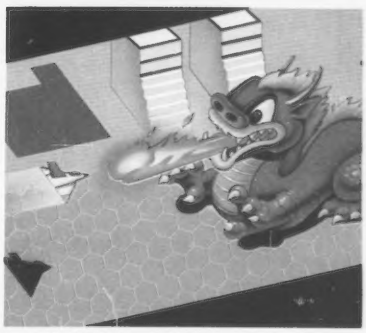

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✓ NEW	✓ NEW	✓ NEW	✓ NEW	✓ NEW	✓ NEW	✓ NEW	✓ NEW	✓ NEW	FROGGER II
		✓ NEW	✓ NEW	✓ NEW	✓ NEW		✓ NEW	✓ NEW	SUPER ZAXXON

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INTRODUCING FROGGER II THREEEDEEP AND SUPER ZAXXON.

CIRCLE 154 ON READER SERVICE CARD

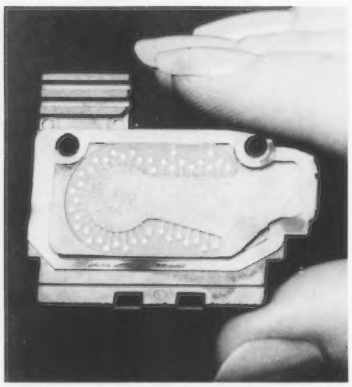
rather than in the printhead. The head passes a small amount of current to a polymer layer through any or all of 40 tiny electrodes mounted one above the other. The polymer is electrically resistive and in conjunction with an aluminum conductive layer generates heat. That heat migrates to the third element, called a "release" layer. The heat causes carbon ink on the fourth layer to be painted onto the paper.

The density of the carbon ribbon printing is said by IBM to be equivalent to that of its standard impact printers. The 40-electrode head can produce character sets or graphics as fine as 240 points per inch in the vertical measure and 360 points per inch horizontally.

Since the printer is not dependent upon heating and cooling of the printhead to generate characters, the Quietwriter can run at a faster speed than that of many other thermal printers. (In the typewriter version of the printer, the same technology can be used to erase errors. A smaller amount of current is generated, making the ink layer sticky and lifting off the offending letter or letters. And since the printing process does not require pins in a printhead to strike the ribbon physically, there is no physical impression made on the paper. Corrections are nearly impossible to discern.)

The printhead is mounted inside the printer at about a 45-degree angle to the paper. According to Frank Hamilton, IBM senior product planner for the Quietwriter, the angle was chosen to compensate for the expected normal wear on the electrodes. In a standard impact dot matrix printer, he explained, wear on the pins is dealt with by the hammer action that drives the pin into the ribbon. With the stationary head used in the IBM machine, the pins wear evenly and the angle serves to allow the electrodes to "paint" characters onto the paper. It is because of the angle of the head that the printer works from left to right only; if it were to print in the other direction, the head would be going against the direction of the moving ribbon. Hamilton hinted, though, that greater speeds may be realized in future devices using the technology.

Taking the covers off the printer reveals a spare and simple design with two small circuit boards—one mounted flat at the front, and the second mounted vertically at the rear alongside the power supply. There is no fan, with the heat from the power board conducted away by convection. The entire shell of the unit is constructed out of high-quality plastics and finished in traditional IBM typewriter gray/beige.



The IBM Quiet Electronic Printhead contains 40 tiny electrodes that meet at the edge of the printhead, right. When a key is depressed on the typewriter keyboard, an electronic signal is sent to a predetermined number of electrodes to form the character. The printhead presses against the ribbon and the electrodes control the release of ink to the paper.

The packaging of the unit is a testament to traditional IBM conservatism: there were more rubber rods, foam pads, cardboard collars, temporary bolts, and fiberboard protectors on the Quietwriter than I have seen in any two typical printers that have journeyed all the way from Japan.

The IBM Guide to Operations instruction manual was clear and useful, including a troubleshooting section.

Options and Accessories

IBM has released four electronic fonts for the printer, with more expected. The matchbook-sized cartridges sell for $50. Available styles are Courier 10 (included with the printer); Prestige Elite 12, Prestige 15, and Boldface. IBM has released 19 fonts for the typewriter version. Cartridges for the typewriter will work in the printer, although they will not produce the graphics characters; cartridges for the printer cannot be used in the typewriter.

The special ribbon for the printer is estimated to be able to produce about 160,000 characters (approximately 30,000 words), depending upon pitch. Replacements sell for $12 at IBM Product Centers. The printhead itself is rated at about 4 million characters, and is designed to be easily replaced by the user at a cost of about $20.

IBM has gone to great lengths to make the printer as electronic as possible, including the disappearance of the platen knob. Single sheets are merely rested in a holding position and the Form Feed button is used to load a sheet into position automatically. The five flat panel buttons on the face of the printer have a total of eight functions when used in conjunction with a "Code" key. Paper can be moved up or down in the printer continuously or in increments as fine as 1/96th of an inch.

A set of five switches on a DIP just inside the cover allows the user to set form and line length, choose linefeed and skip perforation protocols, and select one of two code tables. There is also a three-position switch to select low, medium, or high contrast printing. Accord-

Quietwriter print sample.

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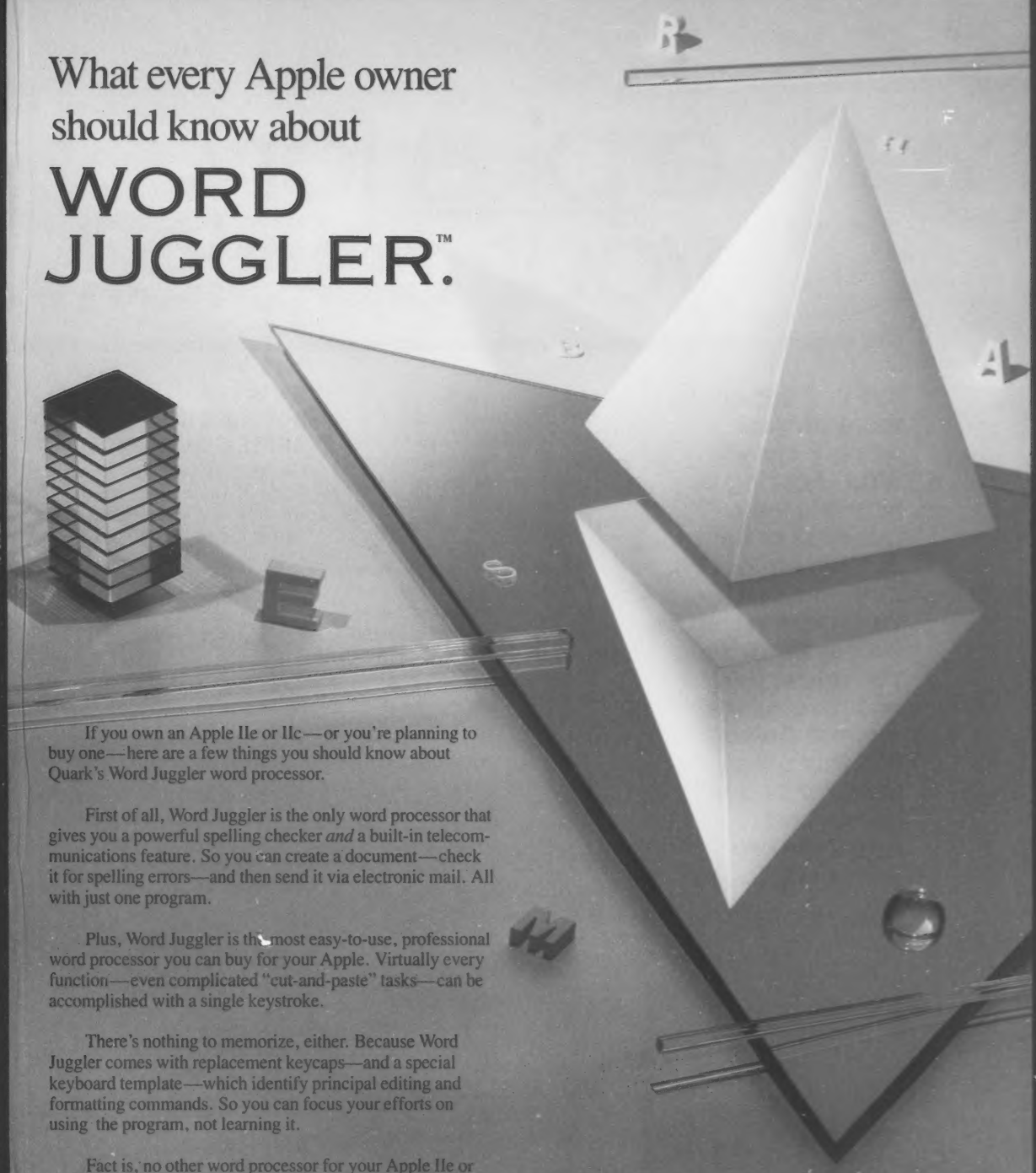

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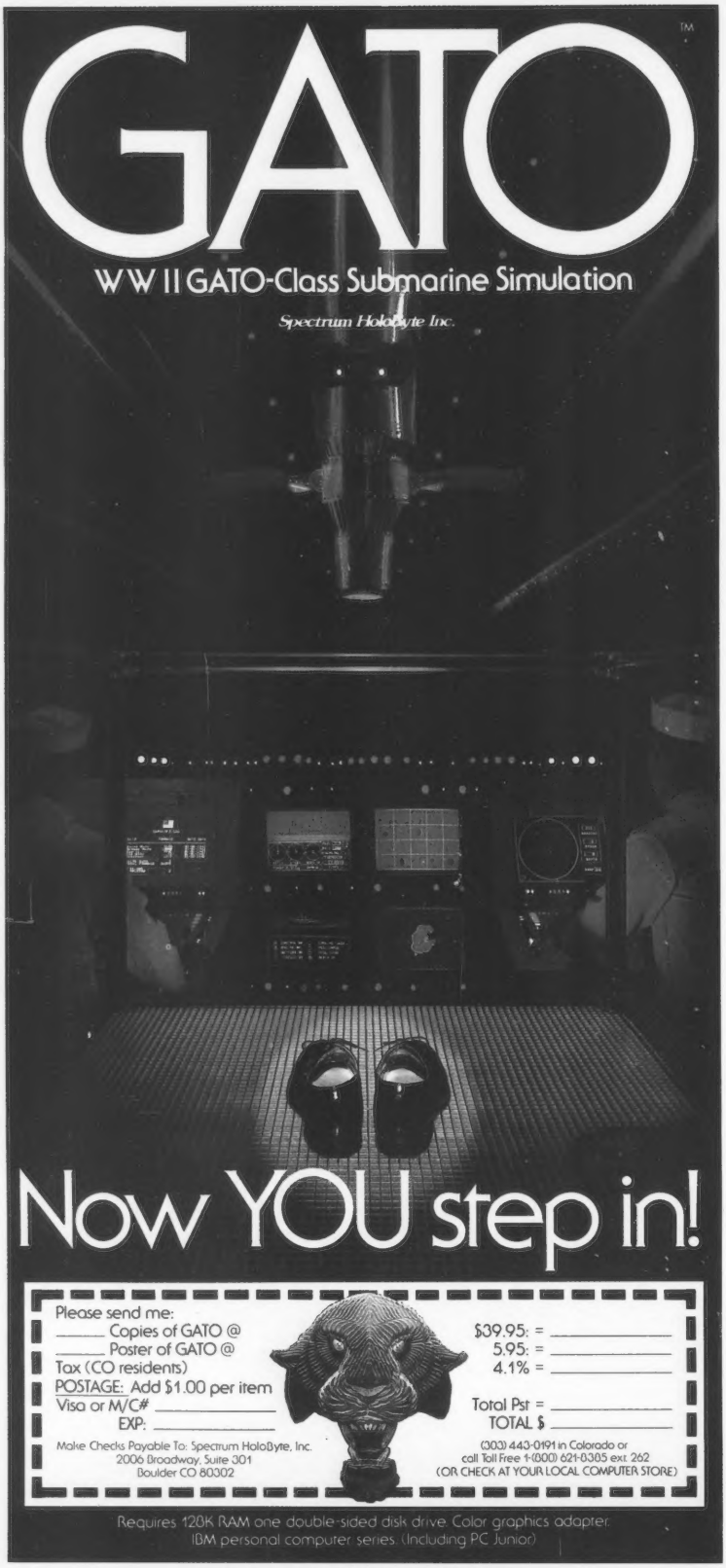
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ing to IBM, the quality of printing can vary slightly with the type of paper or ribbon used and the office climate. The company recommends smooth paper for best results.

A full set of built-in diagnostic tests is engaged each time the printer is powered up. In addition, a full print sample test can be called for. The first line of the print test includes a listing of the DIP switch settings and the contrast selection, as well as a report for use by an IBM technician in servicing the device.

Purchasers of the Quietwriter 7 typewriter can convert it to use as a standard parallel interface printer by purchasing a $60 adapter box and a $150 printer interface card.

IBM will offer an electronic single sheet feeder, priced at $350, in the second quarter of 1985. Unlike many sheet feeders that are mechanically driven by friction or gearing from the printer, the new device will have its own motor and microprocessor for control. A pinfeed for continuous forms is available now for $75.

Purchasers of the Quietwriter 7 typewriter can convert it to use as a standard parallel interface printer by purchasing a $60 adapter box and a $150 printer interface card. The typewriter can also accept a $150 card that provides an on-line 50,000-word dictionary that beeps as soon as a possible misspelling is entered from the keyboard.

The printer is clearly derived from IBM's thriving typewriter division, a product line that according to analysts holds a first-place tie with Xerox, each with about 17 percent of the American market. The new products, together with advanced models of the hugely successful Selectric typewriter and a newly introduced Wheelprinter line, are expected to increase IBM's penetration in the typewriter market.

The Quietwriter modes are made by IBM at its new automated factory in Lexington, KY. Most of the components of the devices are made on site, and the production line uses IBM robotic systems for manufacturing and assembly. ■

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Datasouth Personal Printer 1

Owen Linzmayer

They lied to me! Contrary to what I was told by my editors when I initially took this job, writing printer reviews is not a ticket into the glamorous world of investigative journalism. I do, however, occasionally get my hands on a new piece of equipment that is such a pleasure to use that returning it to the manufacturer causes me great anguish. The Datasouth Personal Printer 1 is such a device.

Before I go any further, I must blow the cover of the Datasouth Personal Printer 1 (DSPP-1) and reveal that it is really the Canon PW-1080A in a flimsy disguise. With the exception of the respective company nameplates, the printers are identical both functionally and physically. The DSPP-1 measures 15-3/4″ wide, 12-5/8″ long, and stands tall at 4-3/8″ high. The attractive two-tone case is fashioned out of textured high-impact plastic, and the entire unit weighs 17.6 pounds. If you think it looks good sitting idle next to the computer, wait till you throw the power switch and put it through its paces.

The DSPP-1 is an 80-column impact dot-matrix printer capable of 132-column condensed text output and graphics at 240 dots per inch. Though it is not an exceptionally fast printer (160 cps, standard print), the Datasouth Personal Printer 1 more than makes up for any lack of speed by offering exceptional print quality in a variety of pitches (3) and modes (9), most of which can be mixed to provide a virtual smorgasbord of type styles. What's more, you can define your own character set or purchase optional font ROMs from Datasouth.

In standard mode, a character is printed on a 11 x 9 dot matrix in a single pass. Near Letter Quality (NLQ) mode offers beautifully formed characters on a 23 x 18 matrix. Instead of printing bidirectionally, in NLQ mode the printhead makes two left to right passes, the second slightly offset by the first. This results in a slow 27 cps NLQ print speed. To make the burden of waiting less painful, the DSPP-1 has a 3K input buffer which drains into a 2K print buffer.

Hardware Profile

Name: Personal Printer 1 **Type:** Dot matrix
Feed: Friction, pin, roll **Speed:** 160 cps
Interface: Parallel, serial (optional)
Density: 11 x 9 standard, 23 x 18 NLQ
Graphics: 240 dots / inch **Character Sets:** 10
Buffer: 2K **Logic Seek:** Bidirectional
Summary: A sturdy, versatile printer loaded with features **Price:** $695
Manufacturer: Datasouth Computer Corp.
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Charlotte, NC 28210
(704) 523-8500

```
Standard Mode
Emphasized Mode
Double-Strike Mode
Elite Mode
Condensed Mode
Near Letter Quality
Enlarged
  NLQ Mode
Enlarged
  Standard
```

Datasouth Personal Printer 1 sample output.

The type of print you desire can be selected via escape codes in software or the internal DIP switch settings. Incidentally, gaining access to the three DIP switches requires dismantling of the unit, as they are located in the belly of the beast. Luckily the printer operates with its cover off, which allows you to experiment with the switches until you find the correct settings for your system. The DSPP-1 ships as a Centronics parallel printer, though an optional RS-232C serial interface is available.

As if the variety of print formats isn't enough, the DSPP-1 is graphics compatible with the bestselling Epson FX-80 printer, thus insuring that it will work with most software packages. I tested the DSPP-1 on an Apple IIe with an Epson APL parallel interface card installed and had no problem obtaining screen printouts from packages such as Koala's *Graphics Exhibitor* and Broderbund's *Dazzle Draw*. The DSPP-1 has three graphic image modes: single, double, and quadruple-density. These correspond to how tightly the dots are packed horizontally per inch of paper. The printhead itself is composed of nine pins aligned vertically and has seven 8-dot, two 9-dot, and one 16-dot (two passes) graphic modes.

The DSPP-1 manual that was supplied for our evaluation was actually the Canon DW-1080A printer manual. I assume that Datasouth will ship a slightly modified version of this 198-page book. Although the documentation provides a wealth of technical information, it is heavily illustrated and written in such a manner that it should present no problems for the average user.

At the time of this writing, the Datasouth Personal Printer 1 carries a suggested retail price of $695. A wide carriage version (156 columns) sells for $895. I expect these prices to drop in light of the fact that the Canon DW-1080A sells for $595, and the Epson FX-80 is now discounted far below that. The Datasouth Personal Printer 1 is a capable little printer simply bursting with features. If the price were a little more competitive I would have no reservations about recommending the DSPP-1. Now if I can only think of a way to hold onto my review unit just a little longer . . . ■

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Photography by Jeff MacWright.

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ONE STEP COMPILE (NO LINKING NECESSARY)	NO	YES	YES
COMPILER SIZE	300K+	NO	35K
TURTLE GRAPHICS	NO	35K	YES
BCD OPTION	NO	NO	YES
PRICE	$295.00	$49.95	$69.95

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Turbo Pascal is available today for most computers running PC DOS, MS DOS, CP/M 80 or CP/M 86. A XENIX version of Turbo Pascal will soon be announced, and before the end of the year, Turbo Pascal will be running on most 68000 based microcomputers.

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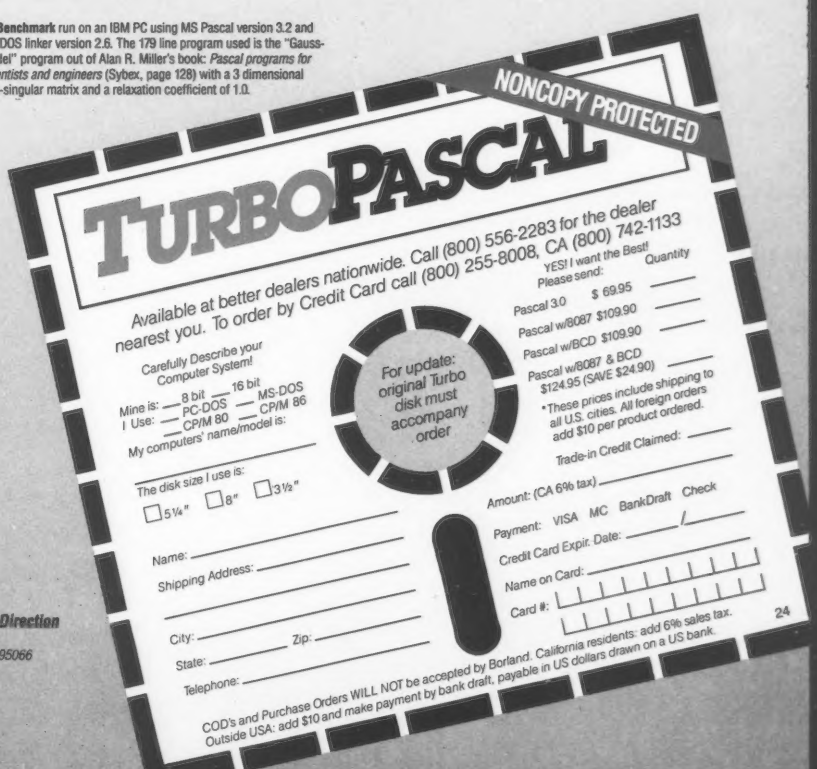
(*) Benchmark run on an IBM PC using MS Pascal version 3.2 and the DOS linker version 2.6. The 179 line program used is the "Gauss-Seidel" program out of Alan R. Miller's book: *Pascal programs for scientists and engineers* (Sybex, page 128) with a 3 dimensional non-singular matrix and a relaxation coefficient of 1.0.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I Use: PC-DOS MS-DOS
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24

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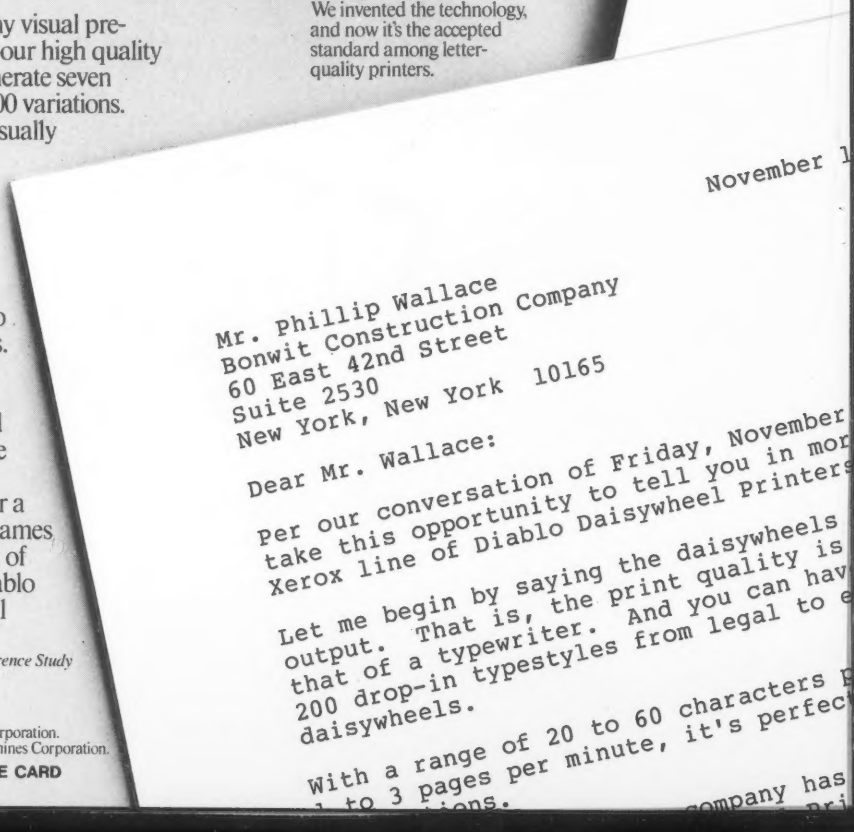
*Source *Datamation Magazine 1983 Brand Preference Study* of printer preference by end users and OEM's.


November 1
Mr. Phillip Wallace
Bonwit Construction Company
60 East 42nd Street
Suite 2530
New York, New York 10165
Dear Mr. Wallace:
Per our conversation of Friday, November
take this opportunity to tell you in mor
Xerox line of Diablo Daisywheel Printers
Let me begin by saying the daisywheels
output. That is, the print quality is
that of a typewriter. And you can hav
200 drop-in typestyles from legal to e
daisywheels.
With a range of 20 to 60 characters p
to 3 pages per minute, it's perfec
company has

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CIRCLE 150 ON READER SERVICE CARD

XEROX

Dot Matrix Printers
At draft speed, characters come out crisp and clear, at up to 400 cps. At correspondence quality speed, characters are so readable they make the term "computer printout" almost obsolete.

Diablo Dot Matrix Printers combine speed and low
quiet, maintenance-free printers. Their various
designed to provide clear and easy legibility. Th
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Parallel interfaces enable the Dot Matrix to work wi
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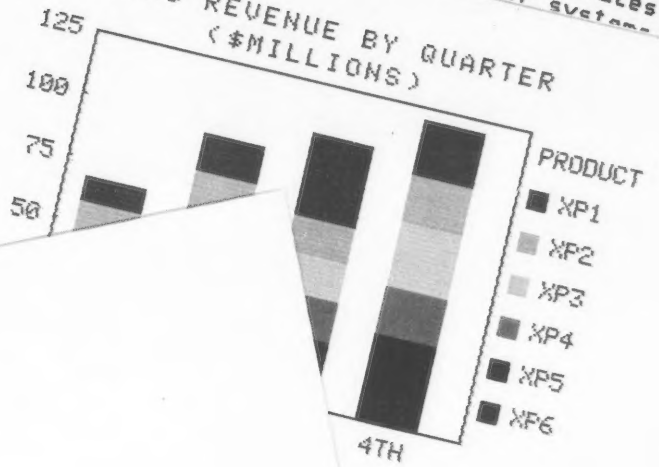

rox Diablo

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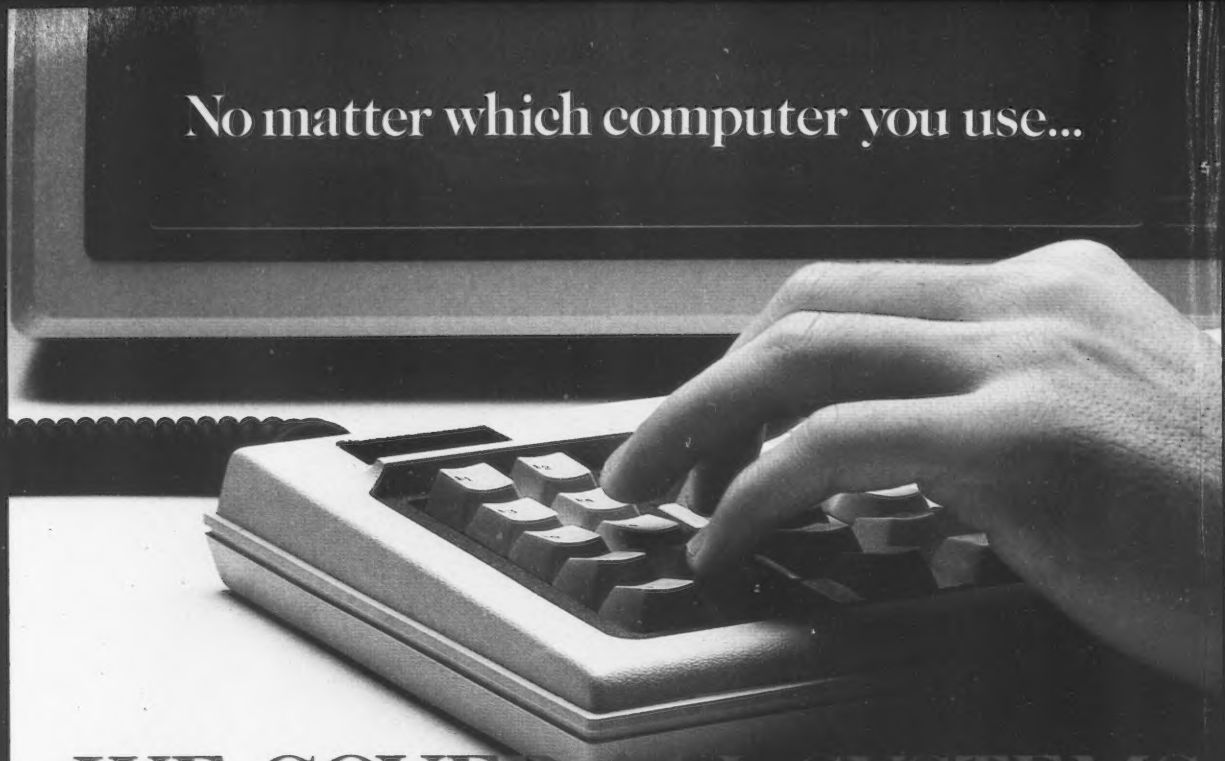

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Percom PHD-10 Hard Disk

Russ Lockwood

If you frequently get lost in the floppy shuffle, that frustrating game of switching floppy disks to find the data you want, you have probably considered buying a hard disk drive. Percom Data offers one of several solutions to the floppy shuffle—at an attractive price—with its PHD line of hard disk drives.

We tested the PHD-10, an external 5.25" 10Mb unit that works with an IBM PC, Apple IIe, or TRS-80 Model III. Percom sells computer-specific kits to hook up the drive to a particular computer. Each kit comes with a disk controller board (called a Personality Card), a flat ribbon cable to link the board to the drive, appropriate documentation, and a set of utility programs to format, section, and boot the drive.

Practically every hard disk drive on the market works as advertised. The main feature we look for in a hard disk drive, therefore, is ease of set-up and operation, with secondary emphasis on customer support. Percom scores well on both counts.

We tried the drive on the IBM PC first. The entire set-up procedure, from box to operation, took us less than 30 minutes. No kidding: board in, cable attached, formatted, sectioned, and available in under 30 minutes. We transferred several files, ran some programs, and created files on the hard disk without problem. We also appreciated the difference in speed and noise between the PHD and a floppy drive; waiting time and distraction were reduced substantially.

Customer Support

Our test with an Apple IIe proved to be more difficult. At first the computer refused to believe that the hard disk drive was attached. Several attempts later, we found that the two pieces of hardware were still not speaking to each other. We had emptied the IIe of all expansion boards except the Percom board and the floppy drive controller board and could think of nothing else that might be interfering with communication. So we decided to test Percom's customer support team.

The Percom PHD-10 attaches to IBM, Apple, and Tandy computers.

Hardware Profile

Name: PHD-10 **Type:** 10Mb external hard disk drive **Systems:** IBM PC, Apple IIe, TRS-80 Model III **Dimensions:** 12.3" x 11.8" x 5.4" **Documentation:** Loose-leaf manuals **Summary:** Excellent drive with excellent support **Price:** Drive $1100; IBM PC kit, $120; Apple IIe kit, $100; TRS-80 Model III kit, $80

Manufacturer: Percom Data
11220 Pagemill Rd.
Dallas, TX 75243
(214) 340-5800

In short, the customer support team passed with flying colors. They provided step-by-step instructions on installing the PHD. The trick was to switch the floppy drive controller board from slot six to slot four and pay close attention to the sequence of utility programs and selection of options within the utilities.

We did not test the drive with the TRS-80 Model III. However, based on our experience with the IBM PC and Apple IIe, we are sure that the drive works just as well on the Tandy machine. We are also sure that if the Model III proves as cantankerous as the IIe, a quick call to customer support will solve any problems.

Documentation

If there are any nits to pick, it is with the documentation. While we had no trouble with the IBM manuals, the Apple versions could use a little work. We wish they were as clear as the instructions from the customer support staff.

In time, you may find 10Mb to be inadequate for your storage needs. Percom anticipated the ever increasing storage needs of micro users and designed the PHD to be expandable. You do not even have to relinquish your original drive to upgrade. Up to three additional PHD drives can be tacked on to the original drive, creating a system large enough for those with even the most voracious storage appetites.

All in all, we were impressed with the Percom Data PHD drive. It proved to be fairly easy to install, versatile enough for three computer systems, expandable, backed by excellent customer support, and attractively priced for an external hard disk drive. If you are considering buying a hard disk drive, take a look at a PHD drive; it could release you from the floppy shuffle forever. ■

CIRCLE **407** ON READER SERVICE CARD

Photography by Jeff MacWright.

Software for Health and Fitness

Michael S. Davidson

Recent medical evidence suggests that many of the diseases from which we Americans suffer are directly related to improper diet and lack of exercise. This has led to an almost insatiable desire in Americans for products that will improve their health. It is not surprising, then, that health related computer software, with its mystique and implicit promise of health nirvana, is on its way to the market in volume.

There is software for health records, health advice, diet analysis, physical fitness, and much more. Some of these utilize the computer in powerful ways that truly hold open the possibility of health improvement. Others are interesting as adventures in technology but fail to offer substantial advantages over traditional books and classes. They may be fun, however, and this is important too.

As a health educator, I see enormous potential for health improvement through the use of computers. It is important, however, that health related computer software be chosen with utmost care. Therefore, it is essential that you consider the following questions before deciding which package(s) to buy.

First, who developed the program? Check the credentials of the authors or consultants. One of them should be a medical doctor, nurse, community health specialist, dietician, health educator, or other recognized health professional. If not, try to find out what qualifies the author(s) to write a program for you.

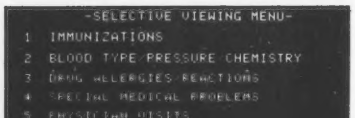
Second, are the database and other information credible? Do they come from the U.S. Government, voluntary health organizations, or other known health agencies or academic institutions? You must be able to check sources if you encounter doubtful suggestions.

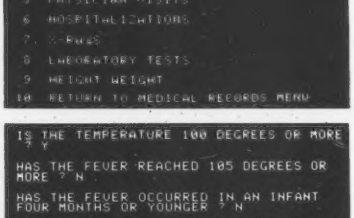
A third important, although almost unanswerable, question is, can the software do any harm? There is little room for error in a health program. Although every program I reviewed came with an absolute disclaimer, there is still the tendency to treat the suggestions of a computer as though they came from some authority higher than a human being. When using a health program, talk to other users about their experience, and look for clarity of instructions. Check for accuracy of calculations, advice, or information. Make periodic checks against some objective measure.

Finally, does the program offer more than just a useful way to do something? Does it educate about the causes, prevention, and treatment of health related problems?

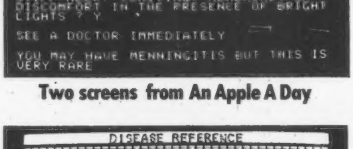
If you take the time to find the answers to these questions, the chances of your buying a useful and significant software package are greatly enhanced.

Following are short reviews of several programs for health records and advice, medical diagnostics, diet analysis, weight loss, and physical fitness. If traditional methods have failed you or you are just interested in a new way of attacking some old problems, read on; I hope you will discover a program that will make you a healthier person.




IS THE TEMPERATURE 100 DEGREES OR MORE ? Y
HAS THE FEVER REACHED 105 DEGREES OR MORE ? N
HAS THE FEVER OCCURRED IN AN INFANT FOUR MONTHS OR YOUNGER ? N
HAS THE FEVER BEEN ACCOMPANIED BY A STIFF NECK, VOMITING, HEADACHE, OR DISCOMFORT IN THE PRESENCE OF BRIGHT LIGHTS ? Y
SEE A DOCTOR IMMEDIATELY
YOU MAY HAVE MENNINGITIS BUT THIS IS VERY RARE

Two screens from An Apple A Day



Internist

An Apple A Day

An Apple A Day from the health professionals at Avant-Garde Publishing is a three-part program for giving health advice, maintaining medical records, and developing a health telephone directory.

Health Advice offers help on 46 different medical categories ranging from acne to venereal disease. The program takes the role of a physician asking a series of diagnostic questions and includes suggestions for health promotion and disease prevention. By the time I got to the end of an illness section, I knew whether to rush to an emergency room, make an appointment with my doctor, or just wait until my symptoms went away. I felt no chances were being taken with my health.

The Medical Records section of *An Apple A Day* is structured to ask for the most basic information about nine areas of health care such as immunizations and hospitalizations. Once you have entered data to the records section, you can retrieve information in either a single category such as Lab Tests or by all nine medical categories. In addition, it is possible to print out the entire medical record. Medical Records makes it possible to maintain an orderly array of medical information that can be used for tax or insurance purposes. Having long term health records could prove invaluable in future diagnoses or if original records are lost.

Overall, this is a good, useful, easy-to-use program for those who don't mind keeping their medical records in a place and form accessible to anyone who can boot a disk.

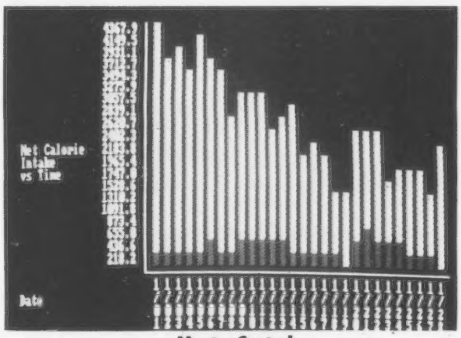
Internist

The Internist from N-Squared Computing assists health professionals and health conscious individuals in making differential medical diagnoses.

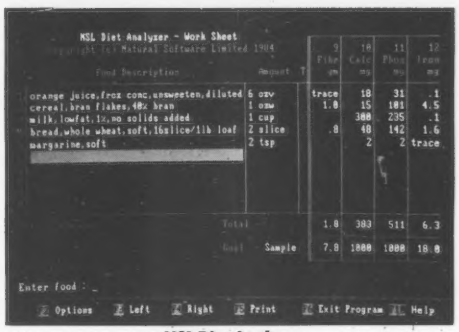
Starting from a main menu of 34 body parts and functions, you select, for example, Abdominal/Eating, Female Genitourinary, or Speech. The program then lists symptoms associated with the selected medical area. You choose those that apply to the patient, hypothetical or otherwise, and the program offers a Pooled or Exclusive Diagnostic Analysis. The Pooled Analysis lists all diseases that have at least one of the indicated symptoms, while the Exclusive Analysis indicates only those diseases that present all the symptoms entered. The database contains 331 diseases, which can be displayed individually to show all the symptoms associated with each.

The program is designed to run on an Apple with only 64K, but it has a built-in high speed operating system called Diversi-Dos which significantly increases its speed of operation. It is quite easy to use, comes with a short but readable Instruction Manual, and offers printed as well as screen output.

Should this program be used by non-health professionals—and it is being offered to the general public—it may create anxiety in some. I do think, however, that most people would benefit greatly by this inside look at how a physician might arrive at a diagnosis. It may also serve to give individuals a greater awareness of the need to get health attention.



Master Control


NSL Diet Analyzer - Work Sheet
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milk,lowfat,1%,no solids added 1 cup 300 235 .1
bread,whole wheat,soft,16slice/1lb loaf 2 slice .8 48 142 1.6
margarine,soft 2 tsp 2 2 trace
Total 1.8 383 511 6.3
Goal Sample 7.0 1000 1000 18.0
Enter food :
Options Left Right Print Exit Program Help

NSL Diet Analyzer

Master Control

"You were not born to be Fat," says *Master Control—A Diet and Exercise Program*. This well crafted program offers the habitual dieting failure a proven behavioral modification approach that I know works well.

Written by physicians for the IBM personal computer, it utilizes a nine-facet main menu consisting of Personal Profile, Diet Prescription, Diet Diary, Weight Diary, Numeric Analysis, Graphic Analysis, Diet Scorecard, Exercise Scorecard, and Health Quiz.

The highly individualized program helps you set a weight goal. It calculates the number of daily calories needed to achieve the goal over a period of time you specify based on age, sex, height, and weight. A diet Prescription of food and exercise is then provided.

The Diet Diary is the heart of the program; into it you make entries by name or number from a list of 3000 generic, brand name, and fast foods. You also enter the date, time, activity, meal, item, quantity, and unit of the food. The activity entered can be for breakfast, lunch, dinner, snack, or exercise. The number of calories is instantly calculated both for the food eaten and the exercise completed.

The Diet History lets you see what and when you have eaten and offers the opportunity to study eating patterns for up to one week. The program can print hard copy so you can keep permanent records. The program also provides a numeric and graphical analysis of your eating habits.

The Diet and Exercise Scorecards ask questions designed to determine how well you have followed the total program each week. The last section of the program is a Health Quiz which asks a series of questions about the educational material found in the Guidebook.

The accompanying Guidebook has some significant drawbacks. Although it contains excellent guides to analyzing your weight and exercise behavior, its poor line justification makes it visually difficult to follow. More important, however, is that the authors write with few headings, listings, or indices, so locating specific information is difficult.

Overall, this program is as much an educational experience as it is an entertaining program to use. It meets the criteria for an excellent health program, and I recommend it highly.

NSL Analyzer

The *NSL Diet Analyzer*, for use on IBM compatible computers from Natural Software Limited, is designed to make it easy to review and improve upon your eating habits. It has five System Building Blocks including Goal Profiles, Work Sheet, Diet History, Food Dictionary, and Help.

The first step in using the program is to establish your Goal Profile. It is recommended by the authors that a physician or dietician be consulted before entering this profile. You indicate the number of calories in the goal and then what proportions of such things as fats, protein, and cholesterol you want to include in the diet.

The second step is to fill in the computerized Work Sheet, the central feature of the program. You enter the name of a food, and the program then displays 24 different nutritional values for the food, keeps a running total for each, and compares these totals with the Goal Profile.

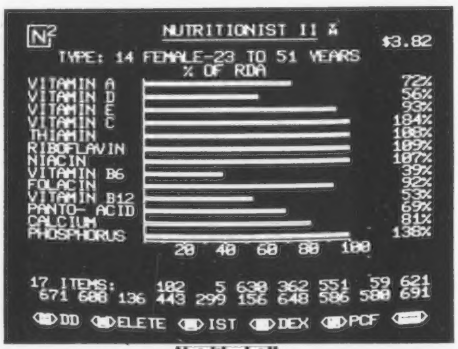
The foods you enter can be stored as the Diet History along with body weight and the number of calories expended in exercise.

A very significant feature of this program is the Food Dictionary. This database has nutritional information on 500 foods and, depending on your hardware, is expandable to 1900 foods. You can add, change, or delete items. You can also enter any combination of foods including home recipes, processed

foods, and entire meals into the dictionary.

The program has fully integrated set of instructions in Help. Using Help will answer any questions about the working of the program and is a highly expanded version of the User's Guide.

Overall, this superior program is extremely easy to use. The database is taken from a series of U.S. government sources, and although the accompanying manual does not indicate the credentials of the writers, the program is professionally conceptualized and appears to have been developed by health professionals. It provides the serious diet analyzer with sufficient information to determine his own course of dietary action. I can recommend this program most highly.



Nutritionist II

Nutritionist II

Nutritionist II from N-Squared Computing is a comprehensive interactive graphics diet analysis program. It is written for professional dieticians and educators, although it would be of great value to families with special nutritional needs.

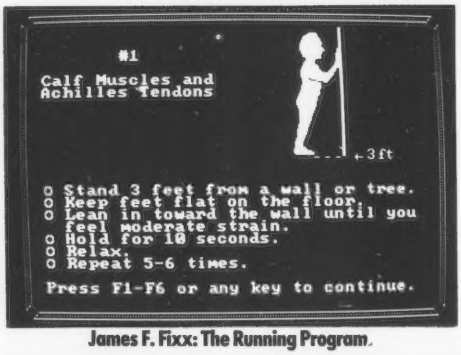
The package comes with a program disk, a database disk, a USDA database source, a quick reference numbered index of all foods in the database, and a Comprehensive User's Manual.

Making full use of menus, the program analyzes food for 38 nutrients including amino acids. It indicates diet deficiencies and excesses *and* can identify their sources. It can create food lists for special requirement diets, and automatically determines food exchanges and substitutes. It has an exercise program that calculates calorie expenditures of different activities and produces a set of physical activities to help implement a calorie reduction plan. It even calculates the cost of a particular food or menu.

Nutritionist II is extraordinary not only in its comprehensiveness but in its ease-of-use and flexibility. It is extremely easy to move from the main menu to the submenus without error. It is quite fast in its operation, and there is virtually no waiting time for calculations of values. It is possible to determine not only specific values of foods but to determine the percentage of various Recommended Dietary Allowances found in each. These RDAs are calculated based on the individual's age, sex, and other variables. Everything is done automatically.

The program is so flexible that it is unlikely to become obsolete. For example, the food database has unlimited expandability and the activity database can be increased to include up to 99 activities. The RDA editor permits you to add or change the RDA data files. Any part of the analysis can be printed out.

Nutritionist II comes with a well written and indexed manual. Although expensive ($299) when compared to other similar programs, *Nutritionist II* is so comprehensive, so well thought out, and so easy to use, that it becomes highly cost-effective—a truly superior product.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Calf Muscles and
Achilles Tendons
3ft
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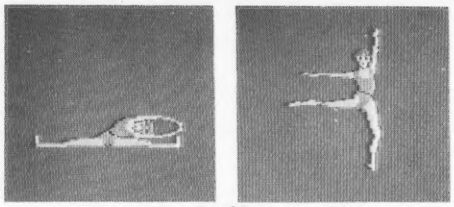
o Keep feet flat on the floor.
o Lean in toward the wall until you
feel moderate strain.
o Hold for 10 seconds.
o Relax.
o Repeat 5-6 times.
Press F1-F6 or any key to continue.
James F. Fixx: The Running Program


Aerobics

Running Your Best Race

Running Your Best Race from Wm. C. Brown Publishers is a software program designed to accompany the college textbook of the same name by Joe Henderson. It is written for both the Apple family of computers and the IBM/PC. The purpose of the program is to make you a better runner by providing quick analysis of your training, testing, and racing results. It also provides a record keeping segment that serves as a computerized diary.

The computer program and book are clearly for the very serious runners who want to improve their racing performance. It is necessary to keep precise records of all running activities to derive full benefit from the program.

The program itself, however, is simple to use and can save running information for up to 30 days. It offers good running advice, and, especially given the credentials of the author, it is to be recommended.

James F. Fixx: The Running Program

The Running Program, the legacy of Jim Fixx, noted running authority, remains a credit to his excellence, for it is a superior health program. Fixx included specialists in medicine, exercise, and nutrition in his writing group. The information/database is based on sound medical research. The program is filled with educational information about exercise, cardiovascular health, lifestyle, nutrition, and much more.

All health related computer programs have strongly worded disclaimers, and they usually suggest that no computer program is a substitute for a physician. *The Running Program* goes well beyond these caveats. It does not permit users to take any chances with their health. When I attempted to set up a training program for a 10K race, the program would not let me because I had not yet reached an average run of three miles per day.

The Running Program is divided into seven basic chapters. The core of the program is Keeping Track . . . The Runners Record. It records your progress, evaluates your diet for weight control and selected nutritional content, and lets

you see how closely daily exercise matches your goals. It can determine the number of calories burned after exercise and provide a basic nutritional breakdown of the food you eat.

The program is enhanced by chapters entitled What Shape Are You In?, Set a Goal and Reach It, How Do You Measure Up?, Nuts and Bolts, and a comprehensive Index. It has a full Help segment, and for those with a color monitor, offers a choice of screen color combinations which help make for extremely pleasant viewing.

Of particular note is the educational adventure in Nuts and Bolts. It gives nutritional advice, tells you how fast to run and how to do warm up/cool down exercises.

Overall, *James F. Fixx: The Running Program* is an outstandingly orchestrated computer program. It is individualized and quite easy to use. Runner/computer buffs—both men and women—shall enjoy it and appreciate the way it can help them get more out of their exercise programs.

Aerobics

Aerobics, The Computer Fitness Program from Spinnaker Software runs on Commodore 64 and Atari computers. Its purpose is to provide you with a total fitness program of 18 different beginning, intermediate, and advanced aerobic exercise routines. The program displays a graphical female figure that does the various exercise routines much as Jane Fonda does.

The program is easy to use and well constructed but quite slow in loading. It comes with a brief but detailed manual that describes clearly how to do the exercises. The same information is also shown on the screen. You can focus on selected areas of the body such as waist, hips, or buttocks, and both warm up and cool down exercises are suggested.

Because *Aerobics* is fun to use and based on sound physical fitness principles, I recommend it highly. ■

Software for Health and Fitness

Program Name	An Apple A Day	Aerobics	Internist	James F. Fixx: The Running Program	Master Control	NSL Diet Analyzer	Nutritionist II	Running Your Best Race
Type	Health records/advice	Physical fitness	Medical diagnosis	Running/ training	Diet and exercise	Nutritional analysis	Nutrition/ exercise	Running/ training
Author's Credentials	Health professional	Unknown	Unknown	Health/ running professional	Health professional	Unknown	Unknown	Runner
Database Credibility	Superior	Excellent	Excellent	Superior	Excellent	Excellent	Superior	Not applicable
Educational Quality	Excellent	Good	Superior	Superior	Superior	Good	Superior	Good
Ease of Use	Excellent	Excellent	Excellent	Excellent	Excellent	Superior	Superior	Good
Manual Quality	Excellent	Excellent	Good (being revised)	Good	Good (lacks index)	Excellent	Superior	Good
Rating	Excellent	Excellent	Excellent	Superior	Excellent	Excellent	Superior	Good
System(s)	Apple II; IBM PC, PCjr; MS-DOS, C64	Atari; C64	64K Apple II; IBM PC	IBM PC, PCjr	IBM PC, PCjr	IBM PC; MS-DOS	Apple II; IBM PC; MS-DOS; CP/M	Apple II
Price	$39.95 to $59.95	$34.95	$95	$79.95	$39.95	$49.95	$299	$18.95 ($9.95 book)

Manufacturers

An Apple A Day
Avant-Garde
P.O. Box 30160
Eugene, OR 97403
(503) 345-3043

Aerobics
Spinnaker Software
215 First St.
Cambridge, MA 02142
(617) 494-1200

Internist
N-Squared Computing
5318 Forest Ridge Rd.
Silverton, OR 97381
(503) 873-5906

James F. Fixx: The Running Program
MECA
285 Riverside Ave.
Westport, CT 06880
(800) 631-MECA
(203) 222-9087

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Healthware
Physicians' Plaza
2300 Round Rock Ave.
Suite 2009
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(512) 863-6910

NSL Diet Analyzer
Natural Software Ltd.
7 Lake St. Suite 7E
White Plains, NY 10603
(800) 626-2511
(914) 761-9329

Nutritionist II
N-Squared Computing
5318 Forest Ridge Rd.
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Running Your Best Race
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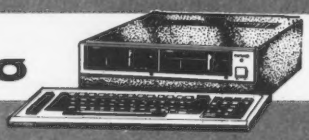

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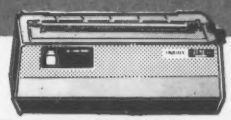

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Speedreading and Skywriting

Growing Up Literate

Betsy Staples

This month we return the emphasis of Growing Up Literate to things verbal as we consider *Micro SpeedRead* from CBS Software and *Snoopy's Skywriter Scrambler* from Random House.

Micro SpeedRead

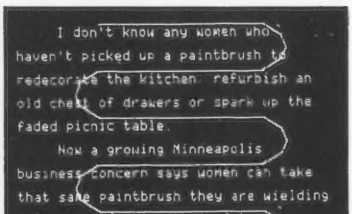
Speedreading is a controversial skill. We know people who claim to speedread everything and who become downright tiresome on the subject. We know others who, having completed expensive speedreading courses, have reverted to their old habits and refuse even to discuss the matter.

We think that speedreading is useful and appropriate for certain types of material, inefficient or even unpleasant for others. We frequently find ourselves skimming newspaper articles, for example. On the other hand, we think that curling up in bed with a good book is a pleasure not to be tampered with by Z-patterns, S-patterns, or comprehensive quizzes.

If you have a desire to read faster—whether for profit or pleasure—CBS has provided an excellent way to train yourself to do so. The *Micro SpeedRead* package is a satisfactory amalgam of computer technology and old fashioned ink on paper print technology, which is, after all, the form in which most of what we read appears.

The 210-page user's manual begins with an introduction to speedreading and an opportunity to evaluate your current reading speed and comprehension. You read an article in the book as the computer times you. When you finish, the computer calculates your speed. Next, you take the comprehension test, and the computer calculates your score again.

After several of these preliminary tests, your attention is focused on the computer screen again as the program demonstrates several techniques that can improve your reading speed: idea clustering, line pacing, double line pacing, and hand pacing. You then practice the techniques using articles in the book as the computer times you and tests your comprehension.


I don't know any women who
haven't picked up a paintbrush to
redecorate the kitchen, refurbish an
old chest of drawers or spark up the
faded picnic table.
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business concern says women can take
that same paintbrush they are wielding
for free and color their futures
green. The outfit, called Ladies in

Micro SpeedRead

Software Profile

Name: Micro SpeedRead **Authors:** Gail Benchener, Rose Wassman, Jim Lucas
System: Apple II, IBM PC, PCjr **Format:** Disk
Summary: An efficient, effective approach to speedreading **Price:** $125.
Manufacturer: CBS Software
One Fawcett Pl.
Greenwich, CT 06836
(203) 622-2525

Throughout the course, you are encouraged to keep track of your progress; skeletons of rate charts are included in the Appendix.

The user's manual is very well done. It is comprehensive and thorough and, although devoid of illustrations, visually appealing. The reading selections are varied in length and subject matter and surprisingly interesting.

The package includes four disks, but you change disks only between lessons, so there is no distracting swapping in the middle of a task or test.

Summary

Micro SpeedRead is an efficient, effective course in speedreading. At $125 it is cheaper than most speedreading courses, and it has the added advantage of being self-paced; you can spend as much or as little time as you have available.

Of course, the long-term effectiveness of the package is dependent entirely on your willingness to hone the skills it introduces. Increasing your reading speed from 200 wpm to 800 wpm in a week may be rewarding, but it won't make any difference in your life unless you practice until the techniques become second nature to you.

Micro SpeedRead can be used equally effectively in the home and in the classroom. And since the only limit to its usefulness is the ability to comprehend the reading selections, it can be used in almost any grade and by all but the youngest members of the family. If speedreading is your goal, we recommend *Micro SpeedRead* without qualification.

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The game begins as Snoopy flies across the screen in his Sopwith Camel trailing a banner on which appears a word. He then reports the number of words he can make from that word and asks for your estimate of the number you can make. You type in a number, and the game begins.

The three difficulty levels—High Flier, Daredevil, and Ace—affect only the minimum number of words you must make in a round to win points and the number of points you can score with each word. A high flier must make only five words in a given round, while an Ace must make 10.

To enter a word, you have only to type it and press Return. The longer the word you make, the more points you

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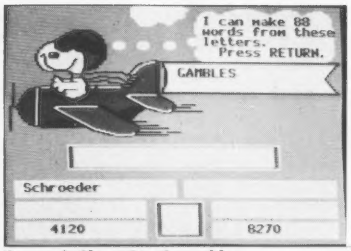
CIRCLE 119 ON READER SERVICE CARD

score. If the word you type is correct, it is quickly added to your tally for the round. If your word is one Snoopy doesn't recognize, there is a short pause before Snoopy chides you gently and disallows your guess. You continue to enter words until your time runs out.

If you get stuck and find that you are unable to find any more words, you can press the right arrow key and the letters of the object word will be rearranged, offering you a different perspective and, frequently, an opportunity to find more words.

If you better your estimate for two rounds in a row, you earn bonus time in which you can continue to make words and augment your score.

A two-player option on side 2 of the disk allows two players to take alternate 30-second turns making words from the same game word. Using side 1, players can alternate rounds for a total of five rounds. We found the latter option somewhat less equitable than the former; some words were simply more difficult to dissect than others, and several times it seemed as though one player got all the troublesome words while her opponent was merrily racking up high scores and bonus time.



Snoopy's Skywriter Scrambler

Software Profile

Name: Snoopy's Skywriter Scrambler
Type: Educational game **System:** Apple II, Commodore 64. **Format:** Disk
Summary: Entertaining spelling practice with a WWI flying ace **Price:** $39.95
Manufacturer: Random House Inc.
201 East 50th St.
New York, NY 10022
(212) 751-2600

In several hours of play, we found only a few words that Snoopy did not know. These we could have added to Snoopy's Word Bank if we had wanted him to accept them in future rounds. New game words, each containing as many as 199 words, can be added to the disk as well.

Documentation

The small 16-page booklet is typeset and illustrated with the familiar Peanuts characters. It tells you all you need to know about loading the disk and playing the game.

No educational objectives are offered with the game, but we feel safe in saying that players will benefit from the spelling practice offered by *Snoopy's Skywriter Scrambler*. If they are encouraged to link meanings with the words they spell, they will probably improve their vocabularies at the same time.

Snoopy's Skywriter Scrambler combines just the right amount of whimsy with a serious spelling challenge to create an enjoyable game that will provide hours of entertainment in home or classroom. ■

CIRCLE **409** ON READER SERVICE CARD

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CIRCLE 122 ON READER SERVICE CARD

A look at the latest craze in computer entertainment—trivia games

Trivia Mania

Russ Lockwood

Trivial Pursuit, the original trivia board game, excites a diverse array of passions at *Creative Computing*. From trivia fiend to trivia foe, it is a game we love to hate, and our editorial meetings sooner or later degenerate into trivia slinging matches. We cheer the home team, heckle the opponents, and emit gasps of amazement and groans of incredulity.

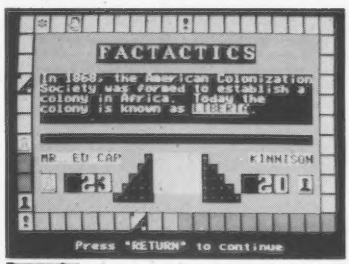
As usual, when a manufacturer introduces a good product, a pack of clones follow, sometimes improving on the idea, sometimes not. Trivial Pursuit has spawned a host of imitators, and they have spilled over into the computer marketplace.

Computer trivia games represent a real upscale side of the trivia market, and many manufacturers are trying to grab a share of that market. One manufacturer swears trivia is a $1 billion a year industry—if correct, certainly not a trivial sum.

However, we worry less about marketing and more about quality. We do not want to see a rerun of the maze game craze, when manufacturers rushed out program after program—all modeled on the popular Pac-Man. Some were entertaining and imaginative adaptations; others were not.

Fortunately, most manufacturers are delivering quality computer trivia games. The typographical errors are few and far between, and the facts seem correct. The following reviews will help you choose the trivia game that is right for you.

CompuTrivia



Factactics

CompuTrivia

CompuTrivia, from Extek, contains more than 1300 questions divided into eight categories—Arts, Odds and Ends, Business and Politics, Sports, Entertainment, Geography, Science and Nature, and History. From two to six players or teams can play at once.

All functions of the game are controlled with the spacebar on the keyboard or the fire button on a joystick. *CompuTrivia* picks a category for you randomly or lets you choose your favorite from a menu. The game displays the question on the screen, and you answer the question aloud. You press the spacebar or fire button to see the correct answer, and again to add points to your score if your answer is correct. An error menu allows you to rectify mistakes.

So far, *CompuTrivia* sounds like computerized Trivial Pursuit. Well, the similarities end quickly. You must alternate answering questions with the other players or teams. We cutthroat trivia fans want to continue answering questions. It is a reward for our mental travail. Alas, no reward in *CompuTrivia*.

Correct answers elicit "witty" rhymes and sayings which range from mediocre to awful. Mercifully, a menu option allows you to shut this feature off.

The graphics and sound routines of the game are adequate but nothing special. An unnecessary graphics routine—guiding a "+" through a maze—ends the game.

Factactics

This interesting two-player game from Daystar contains more than 2000 questions in seven categories—Movies, Music Potpourri, Rock and Roll, Sports, Television, Americana, and The Big Mix. The game is played on a game board with 58 squares, and you race the clock to come up with the answers. The more time you take, the fewer points you score. The more times you circle the board, the more points you score per question.

Both players use the keyboard. The first to press a key when a question appears on the screen gets to answer the question. An incorrect response gives the other player a chance to answer the question. If time expires before either player tries to answer, *Factactics* provides a clue by scrambling the letters of the answer.

Although some of the questions are multiple choice and true and false, most are fill-in-the-blanks, and the game provides the number of characters in the answer. According to the manual, "minor typos may be forgiven." Indeed, occasional major typos were forgiven during our testing.

The graphics and sound routines of the game are a cut above average. The board features three special squares: bonus, which allows you to increase your score; flip-flop, which lets you exchange places with another player and increases your points in doing so; and freeze, which halts the advance of a computer-controlled character called the Wise Guy.

Playing *Factactics* is fast, fun, competitive, and exciting. The board on the screen offers a visual thrill lacking in text only games. Just about everything is adjustable—the timer, the special squares, the Wise Guy—and the game

contains the right mix of easy, medium, and difficult questions. High scores are saved to disk, which is a nice touch for trivia egos.

Fax

Fax, from Epyx, contains more than 3700 questions divided into four categories—Entertainment, History, Sports, and Grab Bag. For one or two players, it has three skill levels which automatically change as you answer more and more questions.

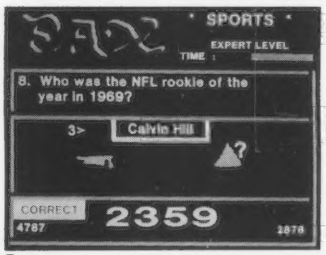
Fax uses two timers. The first gives you a set amount of time to answer the question. The faster you do so, the more points you score. However, the time zooms by with amazing speed.

The second timer is called the game clock. When it reaches zero, the game ends. You earn bonus time by reaching a certain score. However, as your point total increases, so does the skill level. Thus novice-level questions appear first, then expert-level questions, and then genius-level questions.

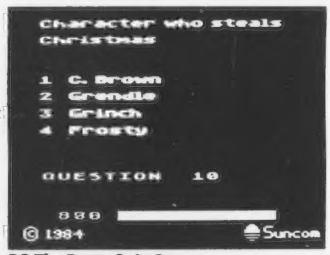
All questions are presented in multiple-choice format. With two players, the game awards points to the first player to answer the question correctly.

With that quick timer, *Fax* really piles on the pressure. However, one trick to boost your score is to answer the question immediately, picking any choice just to stop the timer. Fax does not subtract points for wrong answers, and you save valuable time on the game clock.

We like *Fax*, but caution that it is an intense trivia game. Total concentration is required, and you must be fast—very fast—to answer the questions. A sweaty brow is definitely not optional.

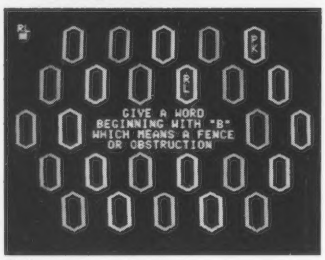


Fax



PQ The Party Quiz Game

Olympicks



Quizagon

OlymPicks

The 1984 Olympics are but a fond memory, but the spirit of athletic accomplishment lives on in *OlymPicks*, a combination trivia game and database by Edupro. The one- or two-player game contains 800 questions in ten categories—1980 Gold, 1976 Gold, Olympic Records, Events, Famous People, Countries, Cultural Geography, Olympic Terms, Olympic History, and Freestyle. It also holds 6820 Summer Olympic records from 1896 to 1980.

OlymPicks displays multiple choice questions, although the number of choices depends on your score. You start off with three per question, but as your score increases, you pick from four, and finally five choices.

The game consists of ten rounds, each of which consists of three questions from one category.

A timer starts at 50 and counts down to zero (about 20 seconds or so). Your score depends on the amount of time remaining and how often you have chosen questions from a given category. The more times you pick a category, the lower your possible score per round.

OlymPicks also has an extensive database containing statistics on event medalists. Edupro is updating the database with 1984 statistics.

Olympic buffs cannot go wrong with *OlymPicks*. It is not only a game, but a reference tool too. *OlymPicks* gets the gold for Olympic trivia.

PQ The Party Quiz Game

Suncom knew that other computer trivia games used joysticks to free players from crowding around the keyboard. But passing around a joystick can turn out to be just as inconvenient. Suncom solves the problem by including four "quick response controllers" with its trivia game *PQ The Party Quiz Game*.

The controllers have four large buttons to answer questions, check scores, and otherwise control the game. All four plug into an interface box via modular telephone jacks. A cable from the box plugs into the two joystick ports on the computer.

In short, this modification of paddles is a stroke of genius. Up to four players (only two with the Apple IIc) can gather around the computer, each with his own controller. It makes playing the game much easier and gives you a feeling of controlling your own destiny.

Now that we have raved about the hardware, what about the software? We are pleased to say that *PQ* is an exciting game, with or without the clever controllers.

PQ poses multiple choice questions. A timer ticks off the seconds. Two different games are available: competitive and social. In the competitive game, the first player to choose the correct answer stops the timer and receives points equal to the time remaining on the timer. In the social game, all players can answer the question and each one who answers correctly receives points equal to the time remaining on the timer. Nice touch, Suncom.

A game lasts from five to 20 rounds, with each round containing ten questions. Certain rounds are called Lightning Bonus Rounds, in which each player has approximately 20 seconds to answer up to ten questions. These rounds are fast and furious, and the program does not take the time to display the correct answers as it normally does.

The questions in *PQ* are abbreviated, rarely exceeding four or five words—much shorter than the other trivia games. We learned to appreciate this. You can read and comprehend questions quickly, and the game really zips along. *PQ* saves high scores to disk.

Quizagon

Quizagon, by Counterpoint Software, is probably the most esoteric of all the trivia games we evaluated. With more than 6000 questions in four cate-

gories—Science and Geology, Entertainment and Arts, Sports and Games, and Potpourri—it certainly seems like your basic trivia game, but the playing board and sound effects make it quite different.

The oval playing board contains 26 hexagons, each of which holds a different category. Four of these blink and are called quizards. Answering a question while on a quizard is akin to receiving a wedge in Trivial Pursuit. Only trouble is, the quizards keep moving across the screen. Trying to land on one is like trying to catch a will-o'-the-wisp.

If you succeed in landing on the four quizards and answering the questions, you travel through what looks like a space warp to the Grand Quizard (a big hexagon).

From one to four players or teams can play *Quizagon* at a time. The game displays the questions in the middle of the oval board. You say the answer aloud and press the spacebar to see the correct answer.

Quizagon is actually one of the older computer trivia games around. The copyright says 1983, which means it predates the current trivia craze by about a year. It just shows that quality never goes out of style.

The only disconcerting aspect of *Quizagon* is changing the disk. The 6000 questions are stored on four disk sides. Whenever questions seem to be repeating, you must change the disk. However, this is a small price to pay for such a large assortment of questions.

Roll Call USA

Roll Call USA, from Creative Software, combines United States history and geography in an educational trivia game for children. It contains 200 questions divided into five categories—Capitals, Major Industry, Largest Noncapital City, Statehood Date, and Potpourri. From one to four players may participate.

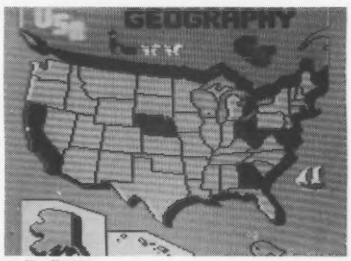
The game uses graphics effectively. A colorful map of the United States is displayed on the screen and one of the states begins to blink. The screen clears, and the program asks you to name the blinking state. It then poses a question from the category you chose. After answering, the program returns you to the map of the United States, except that state has changed color.

Roll Call USA requires you to type in your answers. Thus, spelling counts. The game gives you three tries to spell an answer correctly—a nice touch.

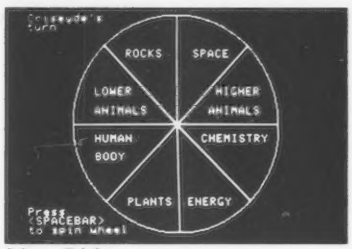
Roll Call USA will certainly help a child learn a few facts about the United States and prepare for those quizzes that history teachers enjoy giving. Adults will find the game interesting for the first few playings, if only to refresh their memories. All in all, *Roll Call USA* is a worthwhile package from Creative Software.

Science Trivia Challenge

Spectrum Software is well known to us at *Creative Computing*. Their "microcourses" in elementary science earned a



Rollcall USA



Science Trivia

bronze medal in our Software Olympics (*1984 Software Buyer's Guide*). We have come to expect excellent programs from Spectrum, and *Science Trivia Challenge* is no exception.

The game caters to students in grades three through eight, although we think the questions might be too easy for children at the upper end of that range. There are 200 multiple choice questions divided into eight categories—Rocks, Lower Animals, Higher Animals, Energy, Plants, Space, Human Body, and Chemistry.

The object of the game is to answer one question from each category. The program selects the categories randomly, and each question has four choices. You are allowed two guesses per question.

Overall, we think the questions are rather thought provoking for the age group, although the choices can be somewhat silly. For example, What is in the center of the Earth? Volcanoes, liquid rock, steam, or gerbils? The least they could have done was substitute tribbles for gerbils. Fortunately, such oddball choices are few and far between.

Science Trivia Challenge is an excellent program. We only wish it included more questions.

3K Trivia

3K Trivia is part of the Personally Developed Software series marketed by IBM and is available either as a standalone program or as part of the Family Games Package. By the way, *3K Trivia* does not load into 3K RAM. Its name derives from the fact that it contains 3000 questions.

The game reminds us of a television game show called The Joker's Wild. Like a slot machine, the six categories—Science and Nature, Sports, History and Geography, Show Business, True Trivia, and General—whirl within three windows. Once the whirling stops, one category appears in each window.

Your score depends on how many times the same category appears at once. For example, if three different categories appear in the windows, you can score only 50 points. However, if the same category appears in all three windows, you can score 1000 points. The game includes jokers, which function as a "wild" category. If you are truly lucky, jokers appear in all three windows, giving you a shot at 2000 points.

Of course, there is a small obstacle of answering the question correctly. The game displays the number of characters in the answer, and you type in the characters. Hints cost you 50 points, and the program will give you partial credit if 60 percent of the characters in your answer match the real answer.

The game includes a timer, which can be set from 15 seconds to three minutes. The game ends after 25 questions. *3K Trivia* accommodates up to six players.

3K Trivia allows you to add up to 100 questions to each category. Each question consists of up to three lines of 21 characters each. Each answer can be one line of 21 characters.

The graphics add a pleasant touch to the game. Seeing the categories spin by induces a sense of anticipation, and, if you manage to see the True Trivia skulls, a sense of doom. Our second favorite graphic is the shadowy actor from Show Business; an eerie contrast in black and white.

We enjoy *3K Trivia*. We wish it in-

cluded some documentation. As it is, the instructions are stored on disk.

Trivia

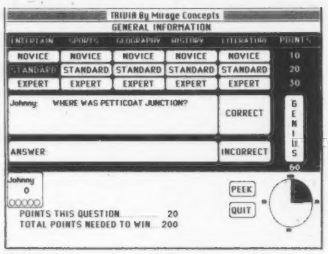
Trivia is the only game of the group designed specifically for the Apple Macintosh. And we can honestly say that of all the programs, it is the easiest to use thanks to the mouse.

Trivia contains more than 5000 questions divided into five categories—Entertainment, Sports, Geography, History, and Literature. Each category has three levels of difficulty, novice, standard, and expert, which are worth 10, 20, and 30 points respectively. A special Genius section for true trivia fanatics, is worth 60 points.

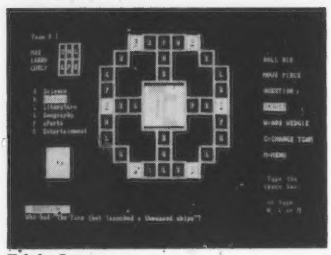
From one to six players can crowd around the Macintosh at once. You use the mouse to pick a category and level of difficulty and answer the question aloud before the onscreen timer reaches zero. Move the mouse pointer to the section of the screen marked answer to find out if you are right. You keep answering questions until you miss. The first player to reach a predetermined point total wins and receives a certificate.

3K Trivia

Trivia Arcade



Trivia


Trivia Compute

Trivia prevents you from constantly choosing the same category. The last two categories you picked are always unavailable, thus forcing you to choose one of the other three categories or the special Genius section. Of course, nothing prevents you from choosing the novice level of difficulty.

However, we question the difficulty levels. Sometimes, the expert level questions are easier than the novice level questions. We suspect that keeps you honest about always choosing the novice level of difficulty.

There is no question about the Genius section, however. Those questions are tough. Our first question was "Where was the choke on the Model T?" Egads, it is hard enough to find the choke on a Datsun, much less a Model T.

Trivia is a real winner. If you own a Macintosh and want a computer trivia game, this is it.

Trivia Arcade

Trivia Arcade, from Screenplay, is a first class trivia game for one to four players. It is also a better arcade game than half of the alleged arcade games that pass through our disk drives.

It contains more than 3500 questions divided into five categories—Sports, Television, Science, Music, and General Knowledge. Question Pack I adds 4000 more questions. Action is controlled by the keyboard or a joystick.

At first, you see icons bouncing off walls within a shooting arcade. Each icon represents a category; baseball for Sports, television set for Television, etc. You must maneuver crosshairs over moving icons and press the fire button on the joystick or the spacebar on the keyboard—before the timer runs out.

This may sound as easy as shooting fish in a barrel, but it is not so. The icons move frantically all over the screen accompanied by equally frenetic music. You can hit an icon, and hence, a category, just about every time, but hitting the one you want is much harder. Several times we could not hit one at all.

The program displays a question from the category you hit. At the beginning of the game, you can choose either multiple choice questions or questions requiring you to type in the answer via the keyboard.

Once you answer a question correctly, the program displays a gameboard of 30 hexagons and four special hexagons. You move one hex per correct answer. As you move, you uncover the letters T, R, I, V, and A. As you might have guessed, you must spell "trivia" and then enter one of the four special hexes.

Once you enter the special hex, you must answer one question from each category. The first player to do so wins.

Trivia Arcade is a marvelous program, as both trivia and arcade game. We recommend this one highly.

Trivia Compute

The best aspect about *Trivia Compute* is the price performance. It gives you a whopping 6000 questions divided into six categories—Science, Literature, History, Geography, Sports, and Entertainment—at a very attractive price. Additional disks containing sports, youth, and children's questions also carry competitive price tags. Up to four players or teams can play.

The version we tested runs on the IBM PC without a graphics adapter—good news for thousands of PC owners. It is also the closest adaptation of Trivial Pursuit we encountered in our extensive evaluation.

The board is roughly circular, and the wedgie squares are evenly spaced along the outer track. However, only four spaces separate the wedgie squares. The computer rolls a die for you and off you move, answering questions aloud, checking to see if your answers are correct, and obtaining wedgies. You continue answering questions until you miss.

If you own an IBM PC without a graphics board, *Trivia Compute* is for you. Otherwise, try one of the other games first.

Trivia Fever

Give Professional Software credit for a superb marketing job. The name *Trivia Fever* has a nice ring to it and the packaging is attractive. The questions are divided into seven categories—History, Famous People, Films and Entertainment, Sports, Nature and Animals, Science and Technology, and

Geography—although only five, chosen randomly or by the player, are in play at once.

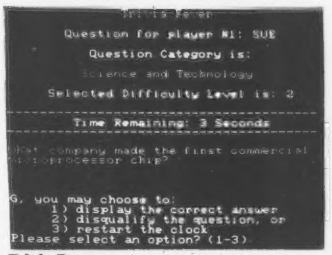
From one to eight players alternate answering questions as a timer ticks off the seconds. Questions are divided into three levels of difficulty. The harder the question, the more points you score. The game ends after you obtain a predetermined number of points in each category and answer a "category completion question."

Overall, we think *Trivia Fever* is an interesting trivia game. The questions are intriguing, and the varying levels of difficulty, while not an exclusive idea, are just the solution to even the game for players of varying ability.

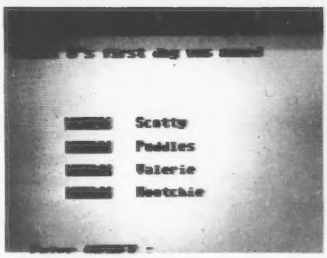
As an added bonus, Professional Software includes a book listing the questions, three place markers color-coded to the difficulty levels, a category selector spinner, and a score sheet. In effect, *Trivia Fever* becomes a computer trivia game that does not need the computer. Now that is a clever idea.

On the negative side, we wish it were possible to continue answering questions until you miss. We realize unscrupulous players might choose the easiest level of difficulty every time, but even a trivia expert gets stumped occasionally.

However, all things considered, we like *Trivia Fever* and look forward to seeing additional question disks as well as the special sports, entertainment, and word-oriented editions.


Question for player #1: SUE
Question Category is:
Science and Technology
Selected Difficulty Level is: 2
Time Remaining: 3 Seconds
Please select an option? (1-3)
Trivia Fever

Uptown Trivia category screen



Trivial Compute

Uptown Trivia question screen

Trivial Compute

The only reason we mention this game is to make our evaluation of computer trivia games as complete as possible.

For the record, we evaluated the World Class Edition, which poses thousands of multiple choice questions about the rich, the famous, and the chic. *Trivial Compute* also comes in Americana, New York, Texas, and West Coast editions.

True to its intent, *Trivial Compute* questions divide into three categories—World Travel, Chic Sports, and Common Knowledge. The game is a real name dropper, with movie stars, royalty, musicians, posh restaurants, and faraway lands. With such a popular and certainly interesting subject, how could the Trivial Compute Company go wrong?

Typographical errors. The game is riddled with typos. The Statue of Liberity, Billy Joal, Jacki O, a 530 carot diamond, Conrad Hitlon (hotel), O'Haire Airport, a fictious (fictitious) megalopolis, and many others. We can understand a few, even a handful, but such a deluge is simply inexcusable.

Next, some of the answers seem incorrect. For example, who was the first U.S. President graduated from West Point? U.S. Grant, Rutherford B. Hayes, Robert Lee, or T. Roosevelt? Did you pick U.S. Grant? We did. We were wrong, too. The answer, according to the game, is Robert Lee, who never became the Confederate President, much less U.S. President.

Is there any reason to buy this game? We think not.

Uptown Trivia

Uptown Trivia is the toughest trivia game of the entire group, in part because of the quality of the questions, but mostly because of the method of presenting them. Other games require you to pick from multiple choices, type in the characters, or say the answer aloud. *Uptown Trivia* displays a question and one potential answer. You decide whether this answer is correct or incorrect. If you think it is incorrect, the game replaces the first potential answer with another, and you decide again. The program gives you four potential answers per question.

Sounds like multiple choice, right? Not quite. You see only one potential answer at a time. Once you decline it, you cannot go back to it. If you accept an answer as the real answer to the question, you do not see the answers that follow. Furthermore—and this is the real kicker—if you choose the wrong answer, the program does not display the correct answer.

Without a doubt, *Uptown Trivia* has the best graphics of the group we reviewed, edging out *Trivia Arcade* and *3K Trivia*. Each of the six categories—Sports, History, Arts and Literature, Entertainment and Revue, Geography, and Science—sports a colorful, distinctive, screen-filling drawing. We especially like the Parthenon (History), microscope (Science), and the comedy and tragedy masks (Arts).

The game includes 3600 questions, and from one to ten people can play. You keep answering questions until you miss. Three correct answers clear a category. Scoring is based on the percentage of questions you answered correctly. The game ends when all players have cleared all their categories.

We are upbeat about *Uptown Trivia*. We cannot recommend it for children, but we can give it a wholehearted endorsement for adults.

In Pursuit of Trivia

The multitude of computer trivia games on the market indicates the popularity of Trivial Pursuit. The low productivity and high traffic in our editorial offices indicate the popularity of these computer trivia games. We have reviewed as many computer trivia games as we could lay our hands on. We know you can find the one that is right for you. ■

A complete listing of the trivia games reviewed and their manufacturers is presented on page 116.

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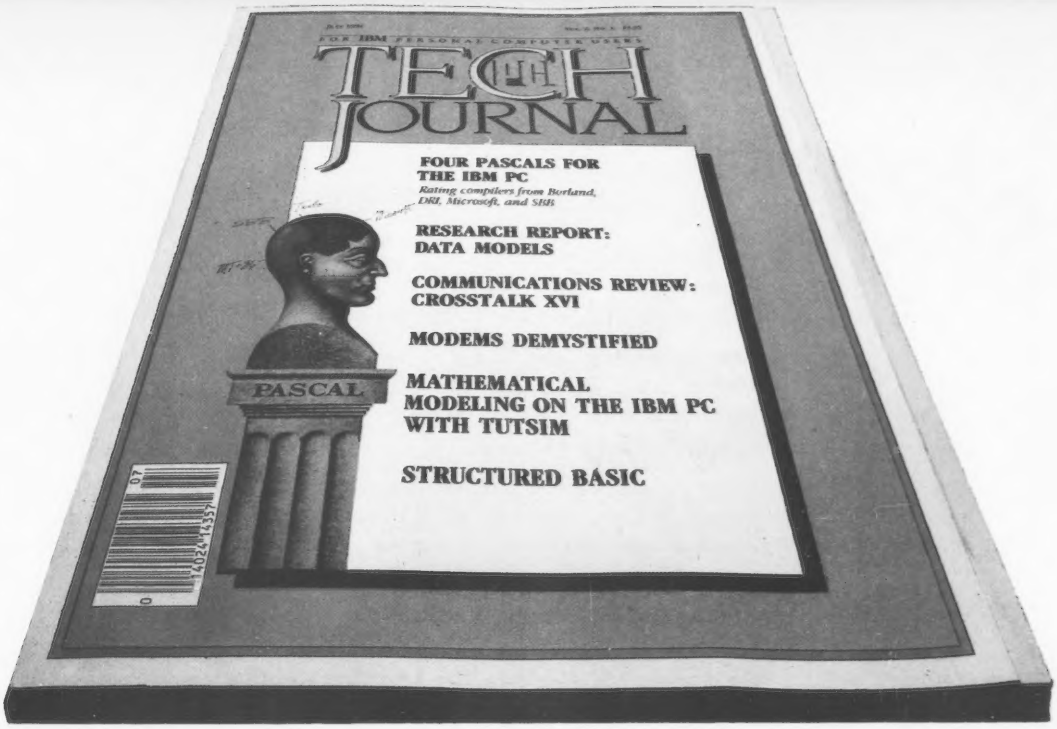
ENTERTAINMENT

Trivia Games

Name, System, and Price	Manufacturer
CompuTrivia Apple II, C64, IBM PC and PCjr $34.95	Extek P.O. Box 305 Oakville, Ontario, Canada L6J 1N0
Factactics Apple II, C64, IBM PC and PCjr, Atari 800 $29.95	Daystar Learning 525 University Ave. Palo Alto, CA 94301 (415) 323-3567
Fax Apple II, C64, IBM PC and PCjr $29.95	Epyx 1043 Kiel Ct. Sunnyvale, CA 94809 (408) 745-0700
OlymPicks IBM PC $59.95 (with 1984 records $69.95)	Edupro 445 Charleston Rd. Palo Alto, CA 94306 (415) 494-2790
PQ The Party Quiz Game Atari 800, C64 $69.95 IBM and Apple $74.95	Suncom 260 Holbrook Dr. Wheeling, IL 60090 (312) 459-8000
Quizagon Apple II $44.95	Springboard Software 4005 West 65th St. Minneapolis, MN 55435 (612) 944-3912
Roll Call USA C64 $14.95	Creative Software 230 East Caribbean Dr. Sunnyvale, CA 94089 (408) 745-1655
Science Trivia Challenge Apple II $16	Spectrum Software 75 Todd Pond Rd. Lincoln, MA 01773 (617) 332-4576
3K Trivia IBM PC and PCjr $19.95	IBM P.O. Box 1328 Boca Raton, FL 33429 (305) 998-2000
Trivia Macintosh $49.95	Mirage Concepts 4055 West Shaw Fresno, CA 93711 (209) 227-8369
Trivia Arcade Apple II, Macintosh, C64, IBM PC and PCjr, Atari $34.95	Screenplay 500 Eastowne Dr. Chapel Hill, NC 27514 (919) 493-8596
Trivia Compute IBM PC $24.95	DEC Computing 5307 Lynnwood Dr. West Layfayette, IN 47906 (317) 583-2230
Trivia Fever Apple II, Macintosh, C64, IBM PC and PCjr, TRS-80 $34.95	Professional Software 51 Fremont St. Needham, MA 02194 (617) 444-5224
Trivial Compute Apple II, Macintosh, C64, IBM PC $34.95	Trivial Compute Co. 3527 Oak Lawn Ave. Dallas, TX 75219 (214) 559-4233
Uptown Trivia Apple II, C64, IBM PC and PCjr $49.95	Uptown Software 268 Summer St. Boston, MA 02210 (617) 423-2304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Keeping Track of Your Stamp Collection The Easy Way

William F. Sharpe

The personal computer is an ideal tool for a stamp collector who wants to keep track of his or her collection. Consider the variety of items collected. Several hundred countries issue stamps. Of these, most offer a bewildering array of stamps—standard issue, commemorative, airmail, semi-postal, parcel post, postage due, official, hunting, special delivery, and certified mail. There are mint stamps, used stamps, blocks of four, plate blocks, zip code blocks, coils, and booklet panes. There are se-tenant stamps (two adjacent stamps of different designs, even sheets of 50 stamps, all with different designs). There are subtle variations in color and design, perforation differences, gum varieties, watermarked and unwatermarked stamps.

Many collectors don't segregate their stamps by country but rather by topic. Specialized collection topics include space, dogs, cats, flags, maps, computers and even "stamps on stamps."

Most serious collectors have developed their own systems to keep track of their holdings, duplicates, and want lists. These methods range from complete loose-leaf albums with pre-printed forms which allow the collector to check off his holdings as simple a method as checking off entries in a catalog or price list to show ownership.

Collectors who want to keep track of the value of their stamps have an added problem in that prices fluctuate. Values as published in annual catalogs go up or down—often on an annual basis.

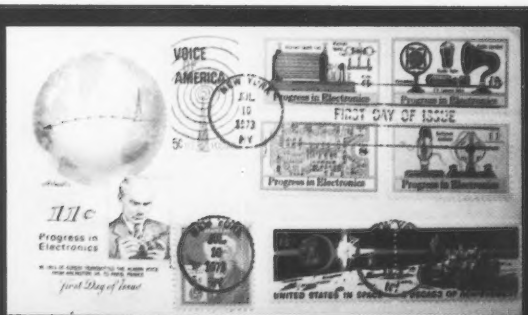
A computer won't eliminate the drudgery of creating an initial inventory list, but it will permit quick updates and changes and manipulation of existing information in a variety of formats.

Essentially, there are three approaches a collector can take in setting up a computerized inventory program. The first offers the greatest flexibility, but is at the same time open to the fewest collectors: you can write your own program. The advantage of this method is that the program can be tailored exactly to your needs, but before you can even consider this approach, you must be familiar with Basic or some other programming language. Even then, you will spend a great deal of time debugging and refining the program so it does exactly what you want.

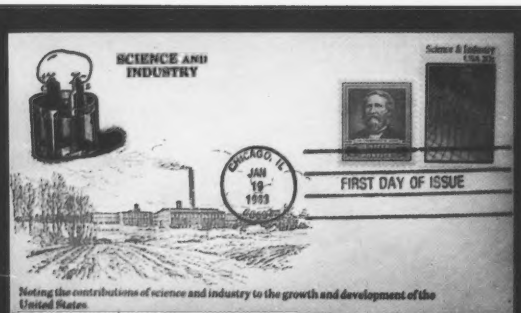
The second approach is to use an existing spreadsheet, file management, or database management program to handle your lists. A spreadsheet can be easily adapted to a stamp inventory and offers the additional advantage of being able to calculate the number of stamps held and their value. It is also easy to use the "what-if" features of a spreadsheet to estimate, for example, what the value of a collection would be if, say, mint stamps appreciated 10% a year and used stamps went up 5% annually.

A simple file management program or a complete database can also be set up to handle a collection to whatever depth of detail the collector desires. Using *dBase III* to keep track of stamps may be considered overkill, but if you are using such a program for some other purpose, there is no reason you couldn't set up a stamp inventory with it.

Finally, there are specialized programs designed especially for collectors. In most cases, the setup is vastly simplified so that you can begin entering your inventory information with a minimum of preparation. Programs of this sort range in price from $14.95 to $299.95. Specialized programs for deal-



First day cover of U.S. 11¢ Progress in Electronics stamp with seven other stamps related to electronics and technology.


SCIENCE AND INDUSTRY
FIRST DAY OF ISSUE
Noting the contributions of science and industry to the growth and development of the United States

First day cover of U.S. Science & Industry stamp.

ers and auction houses are also available—some at even higher prices.

Philatelic Management System

SoftStyle provides the most complete inventory program I have come across. Their *Philatelic Management System* (PMS) is available for Apple and IBM PC-compatible machines. The package includes more than 40 programs with many listing and reporting capabilities.

PMS is versatile because of the integration of the individual programs. As in any inventory system you must enter information about your stamps, but the system makes entry very easy—as simple as filling out an on-screen form. The form permits entry of the following information about any catalog item or set: quantity, unit value, total value, pricing date, lot number, acquisition information including purchase price, sales information, condition, type of stamp, description, and up to four lines of remarks. You may skip any of these entry items but they are available as needed.

Normally stamps are sequenced by catalog number, but it is possible to sort them by year of issue, topic, denomination, or any other way that is useful to you.

The system includes six key files:

- The album list file is the master index of all the albums or holders for your philatelic items. The file contains one record for each album in your collection.
- The album contents files hold the inventories of all the items you have in a specific album. For each album you set up a file to hold the records for each stamp, set, series, or other grouping in that particular album. The number of items you can record is unlimited, as you can add more disks at will.
- The catalog list file contains a list of all the catalogs and price lists you use. It is similar to the album list file in that it contains one record for each catalog or price list you use.
- The catalog contents files hold your price lists. You can enter the latest catalog values in one of these files and the system will, with one command, automatically place the current catalog values into the various album contents files that contain those stamps.
- The address file is a master name and address list of all the companies and people with whom you deal.
- The transaction file keeps track of all additions to and dispositions from your collection. You can analyze this file in a variety of useful ways.

It isn't necessary to know much about files or disk formatting to use *PMS* as the program provides special menus with options in plain English.

U.S. Stamp Inventory Management System

Crockett Software provides a reasonably complete and inexpensive program for the Radio Shack line of computers, including the Color Computer 2. The price is $39.95 for the cassette version and $44.95 for a disk version.

Crockett's program includes three modules: MODIFY, which creates an inventory file and permits additions, deletions, and changes; INVENTORY, which lists, updates, computes total or partial values, and allows results to be displayed either on the screen or by printout; and RETUP, which provides a quick and easy way to update retail prices.

Entries are made by catalog number. You can include a want list within the program by entering zero as the quantity for a stamp listing. The program doesn't sort, but additions to the catalog list can be placed in their correct numerical locations. The inventory is maintained in up to 91 allocated files which you can activate/deactivate as necessary. The initial menu display allows you to enter values in any one of the following classes: general issues, revenues, stationery, postage dues, official, and confederate.

Screen prompts guide you in entering the correct information for each stamp, such as Scott catalog number, classification, quantity, condition code, price paid, and retail price. Help is available by pressing the H key—a fairly sophisticated aid for such an inexpensive program.

The manual that comes with the program is an all uppercase printout on 8 1/2 by 11 sheets, but it is quite readable, complete, and easy to follow. Setting up the activation of files initially is a little tricky, but you really have to do it only once, with perhaps a few modifications later on. The program allows printouts which can be complete reproductions of all the information put in, total cost and retail value summaries, or selected listings, such as plate blocks only.

Stamp Inventory

Another straightforward inventory program, this time for the Commodore 64 computer, is provided by Robert B. Gear. It is not quite as versatile as the Crockett program, but it is available for $25 in either tape or disk format.

Gear's program allows 750 catalog items to be stored in each of eight available file categories. The main menu provides eight options, including adding, deleting, or changing inventory; listing inventory by stamp type or catalog number; reading or saving data from or to

First day cover of four stamps honoring noted electrical engineers.

Cacheted cover produced by the Kokomo (Indiana) Stamp Club in honor of "The Computer Age."

tape or disk; print options; and a dollar total of your investment.

The eight file categories include four for regular issues; one for airmail and back of book; one for envelopes, postal cards, and revenue; one for U. S. Administration and United Nations stamps; and one as a stock book category. Instructions with the program explain how to set your own file categories for other countries or specialized collections. A want list program is also included with the package. It has the same features as the inventory program and can hold up to 1000 catalog items.

The Stamp Program

William E. Rudd has developed a program for the Texas Instruments 99/4A computer, which requires TI's Extended Basic, a 32K memory expansion, a single disk drive system, and an optional printer. The Stamp Program lets you name the country and catalog you wish to use.

The program lets you add stamps to your list, search for a particular stamp, display all the stamps in a file from first to last, showing catalog number, quantity, condition, and price, three stamps at a time. Entries can be set up in proper order. If you get rid of a stamp, it is easy to delete the record from your file.

Rudd is a stamp collector and claims that the program is completely user-friendly. You don't have to know how to program, he says, all you have to be able to do is read. The program sells for $39.95.

The Collector

The Collector inventory program is available from CNC Galleries for Apple II computers. The program requires one disk drive, Applesoft Basic, and an optional printer.

Collector allows you to enter new information about your stamps, print this information on the screen or the printer, modify an entry, and delete information from your files. Sorting by Scott (or whatever catalog numbering system you care to use) is automatic.

Collector requires no computer experience, but if you are familiar with Basic you can modify the program to suit your special needs. At least 344 items can be placed in any single file designation, and five or more files can be stored on one disk. An unlimited inventory can be accumulated by using multiple disks for storage.

Individual files can be printed as want lists, auction lists, etc. or can be grouped by countries, grades, types, or other category. The program is available on disk for $29.95.

Custom Business Series

Custom Business Systems has introduced a collection of computer systems designed primarily for dealers but also of interest to advanced collectors. The system is designed to use a database reflecting industry-accepted catalogs. The most novel feature is the use of coded catalog disks available for major countries of interest. The stamp database is maintained on floppy disks, storing up to 1800 stamp numbers per disk side. Data consist of the stamp number, the latest catalog price, the number of stamps in the inventory, the dealer purchase price, and the total number of sales for the particular stamp.

All stamp numbers, including extensions, are contained in the database regardless of whether there are any in the inventory. This arrangement provides a truly automated complete catalog of existing stamp numbers independent of the dealer's inventory. The progams are available in three levels at prices ranging from $199.50 to $499.50 for the TRS-80, Atari, Apple, IBM PC, and CP/M systems.

Ben Franklin Stamp Collector

The Ben Franklin Stamp Collector series for the IBM Personal Computer is available for $59.95 from 1Step Software, Inc. The program requires at least one disk drive, 64K of memory, an 80-column display, and a printer. The inventory information for each stamp entry includes the catalog number, quantity, condition of stamp, price paid, and date purchased. The program will store up to 4500 entries on a single-sided disk, 9000 on a double-sided disk, and 300,000 on a 10 Mb hard disk.

The command menu, which is displayed on the screen after loading the program disk, permits adding stamps to your collection, correcting information about your stamps, deleting stamps, and listing the collection. An instruction screen is available for each of these menu selections. For example, if you want to add stamps, the instruction screen tells you what information must be entered, the permissible range of values for that information, and the condition code numbers (1-9).

Although this program permits a good control of records, the printing option is limited to a columnar listing of record number, catalog number, quantity, condition code, and price. There is no option to print out more detail or selected portions of your stamp inventory.

Philasoft

Boca Raton Stamps has issued a set of *Philasoft* programs for the Commodore 64. Boca Raton provides a most helpful feature: a set of sample files to manipulate so that you can gain experience before creating your own files.

Philasoft-V is the main inventory program. It allows you to create a new file or access an already created file, add a new catalog number, change any field in a category, change the quantity of each stamp or set, delete any catalog number, and provide a screen display of any valid catalog number.

Philasoft-IV offers searching by description or condition and can produce a full 80-column output to your printer. Philasoft-II is the main report generator, which allows printing of full or annotated reports.

Stamp Collector

MicroClear provides the *Stamp Collector* program for the Commodore Vic 20 and C64 computers, on tape or disk for $29.95. There are three modules on the disk: EDIT, REPORT and BACKUP.

The EDIT program controls the type of information to be stored about each stamp issue. In this mode you can enter up to two catalog numbers for each issue, the face denomination of the stamp, color, physical conditon, mint or used, catalog value, perforation, watermark, physical size, gum information, year of issue, and remarks. There is also a provision to indicate whether or not a particular issue is actually in your collection.

The REPORT program generates an 80-column hard copy report of your collection. It will print out the entered categories and also report the total number of stamps, used or mint, total number of issues, and total dollar value for each category.

The BACKUP program is an unusual module that permits you to make additional copies of your files to be stored somewhere other than where your stamps are located or where your primary files are kept. Note that the Vic 20 version of this program requires an 8K expansion memory cartridge.

Stamps

Gordon T. Trotter has developed *Stamps*, the Stamp Collector's Inven-

tory and Want List program, on disk for the Apple II+ computer. The program allows storing information about each stamp, block, set or other item, including catalog numbers, mint or used, value, notes, and number of copies in the collection.

It is easy to change catalog values listed for stamps when new catalogs are issued. You can also produce an inventory list or want list, tailored as desired with maximum or minimum values. *Stamps* prompts you in clear, concise English, so it is simple to "put your stamp collection on the computer." The price is $50.

Collector's Database

Collector's Database from Munroe Software is a general-purpose program for keeping track of almost any type of collectible. It runs on a 32K Atari 400/800 disk system. Each data disk can hold up to 700 records, each of which can be up to 120 characters long. Additional data disks can be used to extend the file capacity.

Data records are entered and edited interactively; moreover, the order of fields and field sorting can be changed. For example, you could scan a list by catalog number or by price. Furthermore, you can search records on any number of fields to get, for example, all imperforates prior to 1930 with a catalog value over $10. Numeric fields can be totaled to get a total value for the collection or total cost to fill in the holes. This is a very versatile program at a surprisingly modest price ($21.95 postpaid).

Stamps

A second program called *Stamps* is in the Home Organizer series from Batteries Included. The program runs on a Commodore 64 disk system.

The format of a record is fixed and includes country, denomination, number in set, size, shape, condition, color, and value. To some collectors this fixed format may be somewhat restrictive as it does not easily allow for plate blocks or FDCs, nor, astoundingly, does it include a catalog number or issue date in the record!

Data are easily entered and edited. Searching is done by entering a character string (say, "F-VF" in the condition field) or character(s) plus question marks for a wild card search. Search variables can be logically combined to search for, say, all U.S. red 3-cent stamps. The program can sort on any field, total the values, and print reports.

StampMasstore

StampMasstore from SoftShoe Enterprises is a menu-driven program for an Apple II disk system with a printer. From the menu, you can browse through the data file; create want, inventory, and price lists; add or delete items; and open and close files. A sample data file is included on the disk.

The file format is partially fixed and partially open. Each entry (stamp, block, cover, etc.) must be described in 40 characters or less. Since this field is used for sorting, it should start out with a four-digit Scott number; leading zeroes must be filled in on numbers below 999. The fixed part of the format is the 14 (!) grades (or conditions). You enter the number of stamps you have in each grade and the value of each.

The list is always kept on the disk in Scott number order. You can, however, request three different types of lists to be printed: total inventory, inventory by dollar value, and want list (those with quantity 0 in the database). There is no provision for specifying several conditionals. ■

Philatelic Software

Program, Computer, Price	Manufacturer
Ben Franklin Stamp Collector IBM PC, Apple II $59.95	1Step Software Charlotte Plaza, Suite 1300 Charlotte, NC 28244
Collector's Database Atari 400/800 $21.95	Munroe Software P.O. Box 2 Allen Park, MI 48101
The Collector Apple II $29.95	CNC Galleries Two Majestic Lane S. Merrimack, NH 03054
Custom Business Series IBM PC, Apple, TRS-80, Atari $199.50 to $499.50	Custom Business Systems 1293 Lavall Dr. Gambrills, MD 21054
Philasoft V Commodore 64 $20.00	Boca Raton Stamps P.O. Box 7077 Boca Raton, FL 33431
Philatelic Management Systems IBM PC, Apple II $295.00	SoftStyle Inc. 7192 Kalanianaole Hwy. Suite 205 Honolulu, HI 96825
Stamp Collector Commodore 64, Vic 20 $29.95	MicroClear P.O. Box 9368 Raytown, MD 64133
Stamp Inventory Commodore 64 $25.00	Robert B. Gear 830 S. Munroe St. Hinsdale, IL 60521
Stamp Masstore Apple II $49.00	SoftShoe Enterprises 10959 Kane Ave. Whittier, CA 90604
The Stamp Program TI 99/4A $39.95	William E. Rudd 242 Haddon Rd. Rochester, NY 14626
Stamps Commodore 64 $29.95	Batteries Included 17875 Sky Park North Suite P Irvine, CA 92714
Stamps Apple II $50.00	Gordon T. Trotter 10626 Fable Row Columbia, MD 21044
U.S. Stamp Inventory Management System Color Computer $39.95	Crockett Software P.O. Box 1221 St. Ann, MD 63074

For the latest information on new software for stamp collectors, check the Computers and Stamps column by William F. Sharpe every week in *Linn's Stamp News*.

Computers on Stamps

Raymond and Erik Schuessler

A United States stamp honors transistors and "Progress in Electronics."

The first stamp depicting a computer was issued 20 years ago by Israel; two years later East Germany issued the second. Since then, computer stamps have proliferated all over the world—at a rate almost equal to that at which computers themselves have come into our lives.

In a recent article, *Gibbons Stamp Monthly* noted, "With the computer revolution seemingly destined to have an even greater impact on our lives than the industrial revolution had on earlier generations, a thematic collection of computer stamps seems to have a promising future."

As the number of computer stamps issued increases, computer enthusiasts are taking up the hobby and finding that collecting stamps that feature their favorite machines is a satisfying way to combine several interests. Many even use their computers to help in the acquisition and cataloging of their collections.

Recently, the American Philatelic Society (APS) sanctioned a new group for those interested in using computers in philately. The goals are to set and publish standards regarding storage of philatelic data, and to provide a forum for the interchange of ideas regarding the use of computers in philately. An initial survey showed that many collectors were interested in such a group; interests ranged from serious philatelists doing research in postal history to novice collectors who simply wanted an easy method to maintain a want list.

For more information, contact the APS Computer Group chairman, Martin D. Richardson, 7130 Claybeck Dr., Dayton, OH 45424.

Sources of Information

The Mathematical Study Unit of Philately has released a checklist of more than 200 computer stamps. Their journal, *Philamath*, covers the computer topic regularly. To obtain the checklist, write to Larry Dodson, 3624 W. Frier Dr., Phoenix, AZ 85021.

Another source is an eight-page list of computer stamps compiled by Robert V. Boos, 34 Santa Barbara Dr., Plainview, NY 11803 ($0.54 postage in the U.S.; $2.40 for overseas airmail).

The *Scott Catalog of Stamps* (available at most libraries) lists and/or illustrates all the stamps ever issued along with their official numbers and current values. The most up-to-date information on pricing and availability can be found in stamp newspapers like *Linn's Stamp Weekly*. ■

Inventors

J. M. Jocquard appears on this stamp honoring him for the introduction of the use of punched cards for controlling the operation of weaving looms in 1804.

This German stamp honors Gottfried Wilhelm Leibniz, originator of binary numbers.

A French stamp honors Pascal, who produced the first operable calculating machine in 1642.

A 1969 Albanian stamp commemorates the 450th anniversary of the death of the "Great Engineer," Leonardo DaVinci.

Communications

This Danish stamp notes the first century of international telecommunications.

Czechoslovakian stamp from 1966 features a satellite, lazer beam and binary code.

The Romanian stamp of 1967-68 features a map and teletape.

Punched tape was used in this 1976 stamp commemorating the 30th anniversary of the Austrian Press Agency.

This 1975 Turkish stamp depicts the Automatic Telex Network using graphic symbols.

This 1966 East German stamp displays a computer in honor of the Leipzig Fair.

In 1974, East Germany produced this stamp featuring the Robotron Ec 2040 data processor.

1973 German stamp honors an early calculator built by Wilhelm Schickard in 1623.

A computerized threshing and silage producing machine was the basis for this 1973 East German stamp.

Science and Education

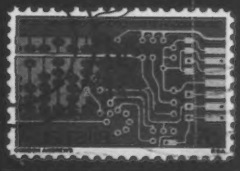
1969 United Arab Republic stamp for the Inaugural Conference of the Scientific Computational Center.

A 1973 stamp from Portugal, issued for a productivity conference, shows computer graphs and sequence counts.

1976 stamp notes the use of computers in soil testing.

A student, a computer, and a book were chosen to represent continuing education on this 1977 stamp.

A 1969 stamp from the Netherlands features an isometric projection from circle to square.



This Australian stamp was issued in honor of the 10th International Congress of Accountants.

Thailand advocates world communication in these 1983 stamps.

The Republic of China notes its postal service anniversary with this mail sorting illustration.

This 1968 Netherlands stamp displays coins and punched card in honor of the Postal Checking Service.

Austrian stamp of a Telex machine was issued on the 50th anniversary of Radio Austria in 1974.

Census Taking

100 years of census taking are commemorated in this 1971 Canadian stamp.

Household and Population Statistics for the 1970 census are the subject of this 1970 stamp from Thailand.

Computers for communication

New Developments in Handicapped Access

Peter Bates

In Dalton Trumbo's 1970 film "Johnny Got His Gun," a seriously injured World War I vet, paralyzed, blind, and dumb, spends his life shut up in a room so the world can't see him. All attempts to communicate fail because his superiors refuse to take him seriously. The film is tragic, not because of his wounds, but because he is both frozen in his plight and deeply frustrated.

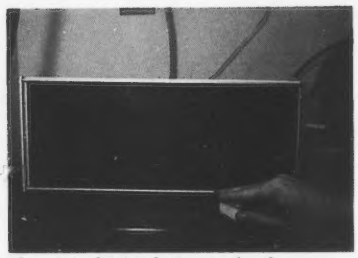
If Johnny were real and living today, he could probably communicate with an Apple IIe personal computer.

"If you can twitch a muscle," says Dr. Howard Shane of Children's Hospital in Boston, "you can probably use a computer." New developments in software, hardware, and access devices make it possible for even pre-school age handicapped children to use computers faster, easier, and yes, cheaper than ever.

Before we talk about some of the new devices on the market, we should mention the access devices, or switches. The most sophisticated communication device incorporating the latest in infrared technology and voice synthesis would be useless if a person with cerebral palsy couldn't access it. To accomplish this goal, computer companies which specialize in products for the handicapped like Zygo and Prenke Romich offer a complete line of switches. The Zygo catalog features no fewer than 25 varieties. They range in complexity from a simple "tread switch" (similar to a sewing machine pedal), to a five-part multiswitch.

A person who can do little more than breathe can operate a computer with a "sip and puff" switch. Blowing activates one function, like scanning a menu; sucking enlists another, like increasing the scanning rate. Others include a "lever switch" for head motion; a flat "leaf switch" to use inside the elbow, under the chin, or in the mouth; and a "brow-wrinkle" switch attached to the head via a sweat band. According to Dr. Bruce Gans of Tufts New England Medical Center, an electro-magnetic switch can detect electrical activity in a twitched muscle and transform it into a switching signal. Gans also considers voice input modules as switches for patients who can make clicking sounds with their tongues.

Tony Bonfiglio with custom keyboard designed at Boston Children's Hospital.



The original TIC Tufts Interactive Computer.

The key to most computer operations for the disabled is row/column scanning, invented in 1972 by a young Tufts University engineer named Rick Foulds. Called the Tufts Interactive Communicator (TIC), the device uses a double line LED display that scans the alphabet in groups of five letters. When it passes by the group containing the desired letter, the user presses the switch. The scanning mode then shifts to individual letters within the group. With another touch of the switch the user selects the letter, which then appears on the top line. In this way words are constructed laboriously, like a puzzle, one piece at a time. Commercially, the device never caught on; Tufts distributed only 200. But for someone who couldn't speak, the TIC was a revolutionary advance over eye-gaze boards. These tedious tools require a tutor to monitor which symbols or words the handicapped person is looking at.

Adaptive Firmware Card

Today, the row/column scanner has reached a high level of functional sophistication with the Adaptive Firmware Card from Adaptive Peripherals, of Seattle, Washington, a small company run by Paul Schwade, the inventor of the card.

For $400, the Adaptive Firmware Card turns an Apple II or IIe into a spe-

cial communication computer that handicapped users can access from any single switch device. According to Schwade, a non-technical person can easily install the flat cable into slot 7 and attach the card itself to the side of the Apple keyboard with velcro.

What can it do? When activated, it is a keyboard emulator, creating letter, numeric, or punctuation displays on line 23 of the monitor. The user can choose the order of the letters (e.g., by frequency of use), the speed of the scan, and which 40 words to store in memory for easy access. There is even a paddle simulation mode for games.

Lee Trocki of Norwell, MA, has Dushane's Muscular Dystrophy, a degenerative condition that leaves him nearly paralyzed. Henry St. James, his rehabilitation counselor, jury-rigged a pad switch for him to use with his Adaptive Firmware Card. Training himself to program, Lee now knows Basic, Fortran, Pascal, Cobol, and assembly language.

When St. James gave him *Multiplan*, he designed a gradebook template for the local school in a few days. Using *Quickfile*, he built an overdue notice database for the local library and printed them out on 3 x 5 cards. With *Applewriter*, he types more than 30 characters a minute and could do more if the screen didn't reform after he typed each character, a peculiar trait of the software. The Florida state school system has even contracted with Lee to adapt the British Acorn Computer for handicapped access. He will convert their brand of Basic to the U.S. operating system.

The Living Center

Apple isn't the only personal computer that can be adapted for handicapped use. Words+, Inc. of Sunnyvale, CA, puts out The Living Center, a system which interfaces with a Radio Shack TRS-80. It first creates a menu of items the user can select, such as letters, words, or sentences for communication; operations to control the system; graphics and games options; and even operations to run household appliances. The Living Center can be interfaced with off-the-shelf items, like printers and voice synthesizers. Whole families can use it, not just the disabled individual.

Like the Adaptive Firmware Card, the Living Center is also a scanning device. Unlike the card, it has a larger vocabulary. Users can scan and select from 1200 available words or build up to 100 new ones.

Clockwise from top left: Lee Trocki using the adaptive Firmware card for his Apple; A student of Howard Shane on his father's lap using the adaptive Firmware card at Boston Children's Hospital; Jerry, a victim of Reyes Syndrome, accesses CompuServe via a C64 and wrinkle switch; An Epson HX-20 hooked up to a Houston Instrument Digitizing Tablet.

We all know how literal computers are. What happens if the operator wants to enter the word "exercising"? He could create it by selecting the first word "exercise" then the suffix "ing," since the system stores endings in its vocabulary too. It is programmed to drop the final e or, for contractions, add an apostrophe.

The Words+ Living Center can also check spelling, add and delete words, phrases, and sentences permanently or for one-time use, and sound an alarm that shrieks for help should the user press a switch for longer than seven seconds.

The minimum system, consisting of computer, software, switch adapter, and switch costs $2200. Words+, Inc. states in their brochure that customers can buy the computer separately and obtain the rest of the system from Words+ at a reduced rate.

The Portability Problem

As affordable and versatile as these systems are, they lack one important thing: portability. For a person in a wheelchair who can't talk, a system that could accompany him as he travelled would greatly improve his quality of life. Researchers are working on this problem. So far they have come up with two solutions.

Dr. Shane worked on a project to modify a special wheelchair for Tony Bonfiglio, a 16-year-old with cerebral palsy who cannot speak. First, he installed an Apple IIe computer behind the wheelchair, beside the three motorcycle batteries that power both wheelchair and computer. Next, he installed a speech synthesizer and mounted a small monitor in front of Tony. The true genius of the system, however, is the custom keyboard and software.

Shane decided that although a single switch/row column scanner would work in Tony's situation, it was too slow. Tony had enough motor control to access a modified keyboard, so designers increased the size of the keys and placed the important control functions (up arrow, space, control) in the center, his best motor area. So that he would not accidentally erase anything, they put the delete key in a hard-to-reach spot.

In designing the software, engineers incorporated direct selection and a scanning cursor. For example, to find the word Katherine, Tony pushes ESC to enter the phrase file. Many handicapped users move across keyboards and unintentionally activate the wrong keys. To counteract this, the engineers provided a delay function. To access all the K words, Tony touches the key for at least a second. According to his instructor Kathy Dawson of the Boston College Campus School, he has figured out on his own that pressing K then A will list all the Ka words. He can then find Katherine faster.

At this point in his education, Tony

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can't read. A Votrax speech synthesizer announces each word as it scans. When asked if he may become too dependent on the synthesizer and never learn to read, Dawson replied that Tony dislikes the sluggishness of voice scanning and has already learned to recognize certain words before they are spoken, and even spell certain small words himself.

As Tony learns, his designers and instructors upgrade his system. Right now they are working on a spring-loading plexiglass rod he can use to place his hands closer to the bottom keys, his most difficult access area. Soon they will turn the delay function down to a half-second.

Demasco is working on the line-of-gaze method, the most exciting development yet in handicapped access.

Rehab engineer Patrick Demasco at Tufts New England Medical Center for Rehabilitation Engineering Center takes a different tack as he adapts lap computers for wheelchair use. Today special computers for the handicapped like the Zygo scanWriter can cost more than $4000. Demasco and his colleagues would like to bring down the price with portable computers. Also, portables are inherently flexible. While a Zygo has a changeable vocabulary, it has a fixed program. In contrast, it is possible to create custom programs for TRS-80 Model 100 because the system is software based.

Demasco has compiled programs on cassette for the Model 100 and the Epson HX-20 that incorporate row/column techniques. Using a display similar to the Adaptive Firmware Card, Demasco bases his character display on frequency of use rather than alphabetical order. Page commands activate discrete series of seven sentences, which the user can then scan and select with a single switch.

Demasco has hooked the Epson up to a Houston Instrument digitizing tablet that relies on an external cross hairs cursor, sometimes mounted on a head pointer. The patient makes a direct selection, similar to Tony Bonfiglio's setup, but with an important difference. Each of 132 squares has two levels, the initial object word or phrase and another level that may, for example, offer the opposite of that word or phrase. Call it an electronic Thesaurus if you like, but it is not difficult to learn. The disadvantage: it is not yet portable. The digitizing tablet is still too large for wheelchairs.

Demasco is also working on the line-of-gaze method, the most exciting development yet in handicapped access. Aided by a head motion tracker developed by McDonnell Douglas Electronic Corporation (and popularized in the film "Blue Thunder"), a miniature video camera mounted on a pair of special glasses "looks" at the operator's eye making a selection on the video display screen. By tracking its location relative to the head position, the camera sends the information back to the computer, which presents the selection.

This technology is attractive because it does away with the slower row/column scanning—the eye scans instead. It does, however, require those special glasses. Demasco is currently working on the "corneal reflection pupil center" technique that tracks eye motion without glasses. So far the greatest limitation is random head movement, which can confound the sensitive video camera.

Looking Ahead

More developments are taking place in handicapped access than we have space to mention. Linc Associates, Inc. puts out *The Special/Ware Directory, A Guide to Software Sources for Special Education*. This reference guide includes 61 pages of providers of hardware and software for special education, along with descriptions. Encyclopaedia Britannica Educational Corporation, for example, sells CARIS, an "Animation and Exploration" program for deaf and learning disabled children. *The Special/Ware Directory* is the most comprehensive I have seen. ($13.95, Linc, 46 Arden Rd., Columbus, OH 43214).

Like most computer fields, handicapped access is growing fast. The opportunities it will open to people like Lee Trocki are limitless. Already handicapped users groups abound on databases like Compuserve. At this point it is important to convince government representatives of the necessity for handicapped access. Then the scarce funding will grow.

Today there is more money available for motorized wheelchairs than for special computers. "This is very shortsighted," says Patrick Demasco. "If I were disabled and had a choice, I would prefer communication to mobility." But that choice should not have to be made. ■

Doing your household chores with a computer

Who Needs a Robot?

George Blank

Many homes today are already equipped with peripherals that will walk the dog, wash and dry the dishes, clean the bedrooms and bathrooms, take out the trash, and wash the car. If you have these devices, all you need to do is interface them to your computer system. If you have a computer and a printer, the interface can be done entirely in software, with no wiring, soldering, or additional parts required.

My own home is equipped with two such computer peripherals: my sons Bill and Rob. I call them computer peripherals because, without the computer, they do not function properly. They forget their chores, argue over whose turn it is to do each job, and are hard to supervise. However, with a version of the computer program presented here, they always know what they are supposed to do and whose turn it is to do each chore. Supervising their chores used to be a hopeless task; now it only takes five minutes a month with the computer and an occasional glance at the chart prepared by this program.

The program prepares a chart, determining which tasks are to be done that day and whose turn it is to do them. The chart is posted in our kitchen. As each task is done, the boys draw a line through their initials on the chart under that task. Every time I pass the chart, I can see exactly which chores have been done and which need to be done. Most important, from my viewpoint, I don't have to listen to stereo renditions of "It's his turn; I did it yesterday!"

For the published version of the program, I have arbitrarily assumed five children: Alice, Brian, Chuck, Diane, and Edith. Five should meet the needs of most households, and it is easy to add more by changing only the first two procedures, GetKey and PrintInitials. If you have fewer children, all you need to change is the line that says:

```
      NOVEMBER -  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
WALK DOG          BR CH DI ED AL BR CH DI ED AL BR CH DI ED AL BR CH DI ED AL BR CH DI ED AL BR CH DI ED AL
WASH DISHES       DI ED AL BR CH DI ED AL BR CH DI ED AL BR CH DI ED AL BR CH DI ED AL BR CH DI ED AL BR CH
DRY DISHES        AL BR CH DI ED AL BR CH DI ED AL BR CH DI ED AL BR CH DI ED AL BR CH DI ED AL BR CH DI ED
CLEAN BEDROOM -   AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL AL
CLEAN BEDROOM -   BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR BR
CLEAN BATHROOM    CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH CH
PRACTICE TRUMPET  DI DI DI DI DI  . DI DI DI DI DI DI  . DI DI DI DI DI DI  . DI DI DI DI DI DI  . DI DI DI
CLEAN YARD         . ED  . AL  .  . BR  . CH  . DI  .  . ED  . AL  . BR  .  . CH  . DI  . ED  .  . AL  . BR
TAKE OUT TRASH    CH  . DI  .  .  .  . ED  . AL  .  .  .  . BR  . CH  .  .  .  . DI  . ED  .  .  .  . AL  .
WASH CAR          ED  .  .  . ED  .  . ED  .  .  . ED  .  . ED  .  .  . ED  .  . ED  .  .  . ED  .  . ED  .
VACUUM CAR         .  .  .  . DI  .  .  .  .  . DI  .  .  .  .  .  . DI  .  .  .  .  .  . DI  .  .  .  .

Draw Line Through Your Name When Job Is Done
```

A sample chart printed by the program.

```
if Child > 5 then Child := 1
```

in the PrintInitials procedure. Change the five to any appropriate smaller number. Leave the extra lines in the program in case you ever expand your supply of household chore peripherals. You will also want to change the initials in the same routine to the appropriate initials for your own children. (If you do not want to change the program, you can go down to your county courthouse and have the children's names changed to Alice, Brian, Chuck, etc.)

The program provides for four types of chores:

- Daily chores that are rotated among all the children.
- Daily chores that are the responsibility of one child.
- Chores for selected days that are rotated.
- Chores for selected days that are not rotated.

If a chore is to be rotated, you need to set the variable Rotate to TRUE and initialize the variable Child to the number of the child who has the job first this month. If the chore is not to be rotated, you need to set Rotate to FALSE and initialize the variable Child to the number of the child who is to do that chore.

The string Days tells the program on which day of the week each task must be done. The seven characters in the string correspond to the seven days of the week, starting with Sunday. If the program finds a period in any position in that string, it will skip that chore on the corresponding day. I use the first letter of the remaining days of the week to identify days when the chore needs to be done, but any character other than a period will do.

The program uses a separate procedure for each chore. I have provided enough examples so that it should be easy to add new chores.

The program is written entirely in Standard Pascal and will run in most versions of Pascal on most computers. I used New Classics Pascal 80 on a Radio Shack TRS-80 Model 4. The following changes may have to be made for other versions of Pascal:

- If your compiler does not allow curly braces, you can use (* and *) or leave out the comments.
- Some compilers will not allow lowercase or mixed case in variable names. Use all uppercase instead.
- Some compilers do not allow variable or procedure names longer than six or eight characters.
- Pascal 80 does not crash if a character variable is read into a numeric variable. It simply asks Redo? and waits for another input. If you have a lesser version of Pascal, you will want to write a

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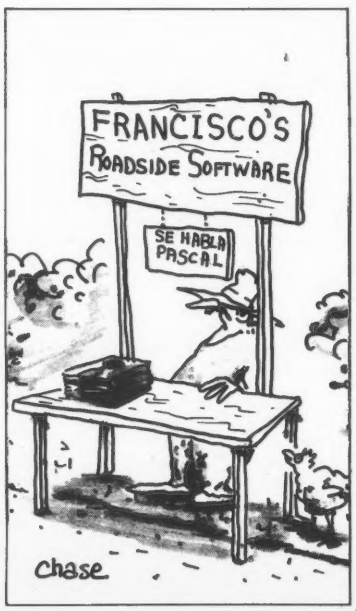
routine to process the month as characters in the TopLine procedure.

• The program was prepared for a printer having at least 110 print columns. If you have an 80-column printer, change PrintInitials to print only the first character of the child's name and one space, eliminate the first space in the write statement in NotToday and change the Count:3 near the end of TopLine to Count:2.

• Pascal 80 uses the built in file LP to print the current line to the Line Printer. Other versions of Pascal use different conventions for writing to a printer.

I originally had many other features in the program including automatic calculation of the day of the week and keeping track of whose turn it was for each chore from month to month in a disk file. Before you write in with such "improvements," let me say that I found the bells and whistles to be inappropriate; the present version of the program is easy to modify when vacations, sickness, and other problems change the schedule, which happens often. The most frequent modification is to change the starting date, which can be done by changing the counting loops in the procedures TopLine and PrintChores, and answering the question "What is the first day of the month?" with the day of the week for the first day of the printout. ■



Listing 1. Chore Calendar.

```
program ChoreCalendar (input,output);
   { by George Blank  9/6/83
     prepared on a Radio Shack TRS-80 Model 4 using
     Pascal 80 from New Classics Software
     239 Fox Hill Road, Denville, NJ 07834
     This program is hereby put in the public domain }

var Child,Count,Day,FirstDay,LastDay,Month  : integer;
    Rotate  : boolean;
    Key     : char;
    Days    : array[1..7] of char;
    DoChore : array[1..7] of boolean;

procedure GetKey;
begin
  repeat
    read(Key) until Key in ['1'..'5'];
                          { change 5 to number of children }
    child := ord(Key) - ord('0')
end;

procedure PrintInitial;
begin
  { CHANGE "AL,BR,CH,DI,ED" TO CHILDREN'S INITIALS }
  case Child of
    1  : write(LP,'AL ');    { "Alice" }
    2  : write(LP,'BR ');    { "Brian" }
    3  : write(LP,'CH ');    { "Chuck" }
    4  : write(LP,'DI ');    { "Diane" }
    5  : write(LP,'ED ')     { "Edith" }
  end;
  if Rotate then Child := Child + 1;
  if Child > 5 then Child := 1
    { CHANGE 5 IF FEWER CHILDREN }
end;

procedure NotToday;
begin
  write(LP,' . ')
end;

procedure EndLine;
begin
  writeln(LP)
end;

procedure TopLine;
begin
  writeln('What month is this (1-12)');
  read(Month);
  writeln(' 1-Sunday  2-Monday  3-Tuesday  4-Wednesday');
  writeln(' 5-Thursday  6-Friday  7-Saturday');
  writeln('What is the first day of this month (1 - 7)');
  repeat Read(Key) until key in ['1'..'7'];
  FirstDay := ord(key) - ord('0');
  writeln(LP);
    { CHANGE NEXT LINE IF NOT USING CENTRONICS 737 or 739 }
  write(LP,chr(27),chr(20));{ SET PRINTER TO 120 columns }
          { 12345678 - 8 spaces }
  WRITE(LP,'         ');
  case Month of
    1 : write(LP,'JANUARY  -');
    2 : write(LP,'FEBRUARY -');
    3 : write(LP,'MARCH    -');
    4 : write(LP,'APRIL    -');
    5 : write(LP,'MAY      -');
    6 : write(LP,'JUNE     -');
    7 : write(LP,'JULY     -');
    8 : write(LP,'AUGUST   -');
    9 : write(LP,'SEPTEMBER-');
   10 : write(LP,'OCTOBER  -');
   11 : write(LP,'NOVEMBER -');
   12 : write(LP,'DECEMBER -')
  end;
  case Month of
    1,3,5,7,8,10,12 : LastDay := 31;
    4,6,9,11        : LastDay := 30;
    2               : LastDay := 28
  end;
  for Count := 1 to LastDay do write(LP,count:3);
  EndLine
end;

procedure PrintChores;
begin
  for count := 1 to 7 do
      if Days[count] <> '.' then DoChore[count] := true
          else DoChore[count] := false;
  Day := FirstDay;
  for Count := 1 to LastDay do
     begin
       if DoChore[day] then PrintInitial else NotToday;
       Day := Day + 1;
       if Day > 7 then Day := 1
     end;
  EndLine
end;

   { EVERY DAY CHORES - DIFFERENT CHILD EACH DAY }

procedure WalkDog;
begin
  Rotate := true;
  write('Which child (1-5) walks dog first');
  GetKey;
        { 123456789 123456789 - 19 spaces total }
  write(LP,'WALK DOG            ');
  Days := 'SMTWTFS';
  PrintChores
end;

procedure WashDishes;
begin
  Rotate := true;
  write('Which child (1-5) washes dishes first');
  GetKey;
          { 123456789 123456789 - 19 spaces total }
  write(LP,'WASH DISHES         ');
  Days := 'SMTWTFS';
  PrintChores
end;

   { EVERY DAY CHORES - SAME CHILD EACH DAY }

procedure CleanBathroom;
begin
  Rotate := false;
  Child := 3;
  Days := 'SMTWTFS';
  write(LP,'CLEAN BATHROOM      ');
  PrintChores
end;

procedure PracticeTrumpet;
begin
  Rotate := false;
  Child := 4;
  Days := '.MTWTFS';  { NO PRACTICE ON SUNDAYS! }
  write(LP,'PRACTICE TRUMPET    ');
  PrintChores
end;

  { CHORES DONE ON CERTAIN DAYS BY DIFFERENT CHILDREN }

procedure CleanYard;
begin
  Rotate := true;
  write('Which child (1-5) cleans yard first');
  GetKey;
  write(LP,'CLEAN  YARD         ');
  Days := '.M.W.F.';  { DO ON MONDAY, WEDNESDAY, FRIDAY }
  PrintChores
end;

procedure TakeOutTrash;
begin
  Rotate := true;
  write('Which child (1-5) takes out trash first');
  GetKey;
  write(LP,'TAKE OUT TRASH      ');
  Days := '..T.T..';  { DO ON TUESDAY, THURSDAY }
  PrintChores
end;

  { CHORES DONE ON CERTAIN DAYS BY SAME CHILD }

procedure WashCar;
begin
  Rotate := false;
  Child := 5;
  write(LP,'WASH CAR            ');
  Days := '..T...S';    { DO TUESDAY, SATURDAY }
  PrintChores
end;

procedure MowLawn;
begin
  Rotate := false;
  Child := 4;
  write(LP,'VACUUM CAR          ');
  Days := '......S';   { SATURDAY ONLY! }
  PrintChores
end;

begin
  TopLine;
  WalkDog;
  WashDishes;
  CleanBathroom;
  PracticeTrumpet;
  CleanYard;
  TakeOutTrash;
  WashCar;
  MowLawn;
  writeln(LP);
  write(LP,'                    ');
  writeln(LP,'Draw Line Through Your Name When Job Is Done');
end.   { save as CHORE/PAS }
```

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There are countless practical applications. Businesses may want the PSS for spoken transmission of information, narration of displays, and product demonstrations. It makes verification of data input possible for the blind. It can be part of a burglar alarm system. Children can use the PSS as a study aid. And it helps games come alive, speaking while you play.

Whatever your computer can do, the PSS can help it do it better, at a cost that makes it all worthwhile: only $395.* Call (313) 583-9884 to hear an actual voice demonstration of the PSS.

*Suggested retail price

There's also the Type 'N Talk.

If you want a less sophisticated unit and want to spend a little less, consider the Votrax Type 'N Talk (TNT). Its vocabulary is also limited only by what you can type. It doesn't use any computer memory, it's compatible with most computers, and it's only $249.* Just plug it in to your own speaker and go!

For more information about the Personal Speech System or the Type 'N Talk, see your local computer retailer, call toll-free or write:

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313-588-0341)

CIRCLE 179 ON READER SERVICE CARD

What's New In Hardware

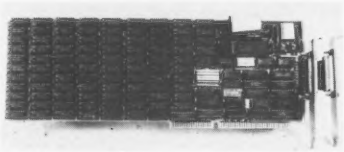
Russ Lockwood

Multifunction Board for PC AT

Tecmar has introduced the Maestro, a multifunction expansion board for the IBM PC AT. It uses two memory blocks for RAM upgrades and includes both parallel and serial ports.

The first memory block upgrades the PC AT to 640K RAM, the maximum amount addressable by DOS 3.0. The second block, which accepts either 64K or 256K RAM chips, upgrades the AT to 2Mb RAM.

Tecmar bundles its Treasure Chest of Software, a set of 24 utility programs, with the Maestro. An optional Pro-



grammable Array Logic (PAL) chip is available as a security feature to protect restricted software.

The Maestro with 0K carries a base price of $529.

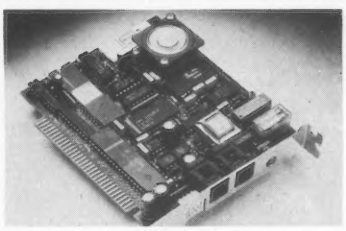
Tecmar
6225 Cochran Rd.
Solon, OH 44139
(216) 349-0600

CIRCLE 410 ON READER SERVICE CARD

Modem, Hard Disk, and Monochrome Board for PCs

AST Research has introduced three products, Reach!, Colossus, and Preview!, for the IBM PC family of computers.

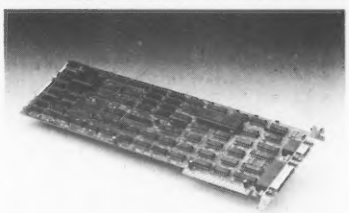
Reach! is a half-card, 1200/300 baud internal modem for use in the short



expansion slot of the PC portable and PC XT. It features call progress monitoring, an onboard speaker, and loopback diagnostics. It is bundled with *Crosstalk XVI* communications software and supports a superset of the Hayes Smartmodem commands. Reach! retails for $549.

Colossus is a 67Mb Winchester drive with a 60Mb 1/4" streaming-tape cartridge backup. It provides 5Mb per minute backup and restore and uses QIC-36 and QIC-24 tape interface and format standards. It retails for $7499.

Preview!, a monochrome display adapter, features 720 x 348 pixel resolution and includes a parallel port. It supports the graphics capabilities of *Lotus 1-2-3*, *Symphony*, and *Framework*, the bit-mapped text of *Word*, and the



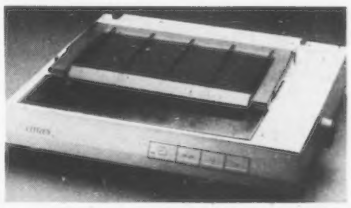
windowing applications of *Windows*. It comes bundled with RAM disk and print spooling software. Preview sells for $399.

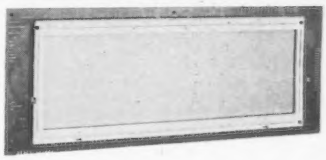
AST Research
2121 Alton Ave.
Irvine, CA 92714
(714) 863-1333

CIRCLE 411 ON READER SERVICE CARD

Printers, Drives, and LCDs from Citizen

Citizen America has introduced two 160 cps bidirectional dot matrix printers with graphics capabilities, the MSP-10 (80 column) and the MSP-15 (136 column). Both include a parallel port and a 1K buffer expandable to 8K. The MSP-10 retails for $499; the MSP-15 for $749.





Citizen has also introduced two 200 cps bidirectional dot matrix printers with graphics capabilities, the MSP-20 (80 columns) and the MSP-25 (136 columns). Both include a parallel port and come with 8K buffer expandable to 64K. The MSP-20 sells for $699; the MSP-25 for $949.

An optional RS-232 serial port is available for $60. All four printers are backed by an 18-month warranty.

Citizen has also announced a half-height 3.5" double sided, double density floppy disk drive with a storage capacity of 1Mb and a line of liquid crystal displays.

Citizen America
2425 Colorado Ave.
Santa Monica, CA 90404
(213) 453-0614

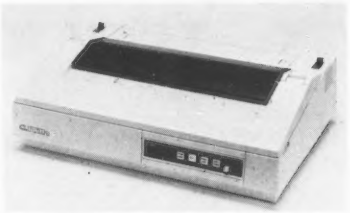
CIRCLE 412 ON READER SERVICE CARD

Printers from C. Itoh

C. Itoh has introduced two new printers.

The ProWriter 7500E is a 105 cps bidirectional dot matrix printer with dot-addressable graphics capability. It features friction and tractor feed, 2K buffer, and 80/132 character column width and comes with either an RS-232C serial, a Centronics-type parallel, or an IBM PC-compatible parallel interface. The 7500E retails for $395.

The StarWriter Y10-20 is a 22 cps bidirectional daisywheel printer compatible with IBM, Apple, Commodore, and Atari computers. It features a 138-column width, 2K buffer, and RS-232C serial or Centronics-type parallel interface. The Y10-20 retails for $595.



C. Itoh Digital Products
19750 S. Vermont Ave.
Suite 220
Torrance, CA 90502
(617) 769-8770
(800) 423-0300

CIRCLE **413** ON READER SERVICE CARD

40 cps Daisywheel Printer

Juki has released the 6300, a 40 cps daisywheel printer retailing for $995. It uses a 96-character printwheel; includes a 3K buffer expandable to 15K; offers 10, 12, and 15 pitch and proportional spacing; and is capable of super- and subscripts, shadow printing, underlining, and boldface.

The 6300 includes either a Centronics parallel port or a RS-232C serial port.

Juki Industries
299 Market St.
Saddle Brook, NJ 07662
(201) 368-3666

CIRCLE **414** ON READER SERVICE CARD

PCjr Products

Quadram has introduced the Quadjr Expansion Chassis, which provides a 360K floppy disk drive, clock/calendar, and Centronics compatible parallel port. It snaps on top of the PCjr and sells for $695.

Quadram has also introduced the Quadjr Memory Board, which fits inside the Quadjr Expansion Chassis. The board comes with 128K RAM expandable to 384K RAM and the QuadMaster II RAM disk and print spooling utility programs. It retails for $275.

Quadram also released QuadMEMjr, a memory expansion unit that snaps onto the side of the PCjr. It comes with 128K RAM expandable to 512K and includes the QuadMaster II utilities. It sells for $275.

Quadram
4355 International Blvd.
Norcross, GA 30093
(404) 923-6666

CIRCLE **416** ON READER SERVICE CARD

Mouse Systems has announced the PCjr Mouse, an optical mouse for use with *Color Paint* on the enhanced PCjr. Mouse Systems packages Designer Pop-up menus with the mouse. The mouse carries a suggested retail price of $195.

Mouse Systems
2336 H Walsh Ave.
Santa Clara, CA 95051
(408) 988-0211

CIRCLE **417** ON READER SERVICE CARD

700 cps Dot Matrix Printer

Output Technology has introduced the OT-700, a 700 cps dot matrix printer retailing for $1595. At 700 cps, the printer uses a 9 x 7 matrix. In correspondence mode, it prints 350 cps using a 9 x 14 matrix.

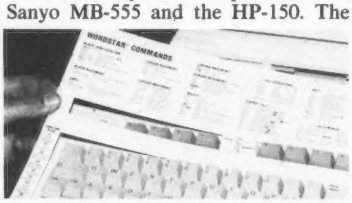
The OT-700 is also capable of printing dot-addressable graphics at 50 x 69 dots per inch in low-resolution, high speed mode and 100 x 69 dots per inch in high-resolution mode. A Centronics parallel port is standard, with an RS-232C serial port optional.

Output Technology
606 110th Ave. NE #205
Bellevue, WA 98004
(206) 453-9794
(800) 468-8788

CIRCLE **415** ON READER SERVICE CARD

Keyboard Templates for Sanyo MB-555 and HP-150

Creative Computer Products has announced keyboard templates for the Sanyo MB-555 and the HP-150. The



MB-555 template summarizes *WordStar* and *Lotus 1-2-3* commands, and the HP-150 template summarizes *WordStar* and *CalcStar* commands. Templates for *Symphony, Framework, dBase III*, and other popular programs are under development. The templates retail for $19.95.

Creative Computer Products
P.O. Box 85152
San Diego, CA 92138
(619) 458-1965

CIRCLE **418** ON READER SERVICE CARD

45" Monitor

Panasonic has released the BT-P4500D, a 45" diagonal color display that offers a graphics resolution of 640 x 240 pixels (non-interlaced) and is compatible with most personal computers. It provides a 16-color display on the IBM PC and Apple III and offers a larger range of colors when used with a computer capable of linear RGB output.

The BT-P4500D operates in monochrome mode using a text resolution of 25 lines of 80 characters. It also functions as a full-color display for tuners and video cassette recorders. The BT-P4500D retails for $4995.

Panasonic
One Panasonic Way
Secaucus, NJ 07094
(201) 348-7000

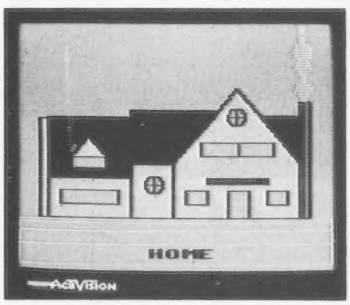
CIRCLE **419** ON READER SERVICE CARD

What's New In Software

Russ Lockwood

Graphics Software for the Home

Activision has released *The Designer's Pencil*, a graphics package for Commodore 64, Atari, Apple II, and IBM PC and PCjr computers. Users

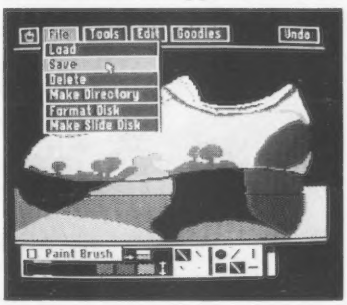


control an on-screen electronic pencil using 75 graphics and musical commands. *The Designer's Pencil* retails for $24.95 for Atari, $31.95 for Commodore 64, and $39.95 for IBM and Apple.

Activision
2350 Bayshore Frontage Rd.
Mountain View, CA 94043
(415) 960-0410

CIRCLE **420** ON READER SERVICE CARD

Broderbund Software has released *Dazzle Draw*, a graphics package for the Apple IIc and 128K Apple IIe with 80-column card. It supports a mouse,



graphics tablet, drawing pad, or joystick and features icons, pull-down menus, 10 different shapes and sizes of brush strokes, 16 colors, and 30 patterns. It retails for $59.95.

Broderbund Software
17 Paul Dr.
San Rafael, CA 94903
(415) 479-1170

CIRCLE **421** ON READER SERVICE CARD

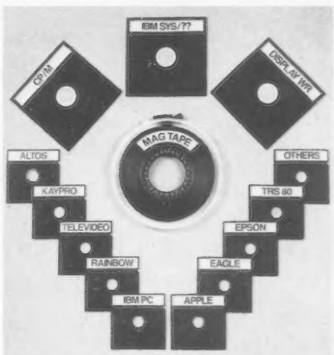
Four Star Software has introduced *Coco Paint*, a graphics software package for the 64K Radio Shack Color Computer. It supports a joystick, graphics tablet, or mouse and features 64 textures and several methods of image movement, manipulation of circles and boxes, and character generation. *Coco Paint* retails for $42.45.

Four Star Software
P.O. Box 730
Streetsville, ON
Canada L5M 2C2

CIRCLE **422** ON READER SERVICE CARD

Conversion Service

Pivar Computing Services has expanded its magtape to disk, disk to tape, and disk to disk data conversion service to include word processors.



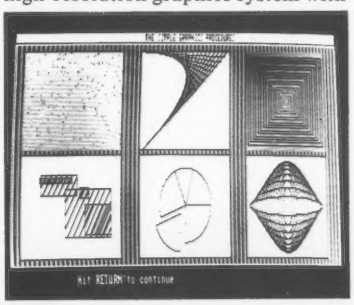
Formats available include Wang, Xerox 860, CPT 8000, Displaywriter, Lanier No Problem LTE 3, Decmate II, DEC WPS8, NBI, and IBM OS/6. All control codes transfer to *WordStar, Multimate,* and *DWII* word processing packages.

Pivar Computing Services
47 W. Dundee
Wheeling, Il 60090
(312) 459-6010

CIRCLE **424** ON READER SERVICE CARD

Turbo Graphix Toolbox

Borland International has introduced *Turbo Graphix Toolbox*, a high-resolution graphics system with



window management capability designed for use with Turbo Pascal. It allows storage of screen images to RAM for real-time animation of up to 500 images per second.

The program supports business graphics such as pie and bar charts and scientific graphics such as histograms and spline functions. It comes with commented source code on disk and carries a suggested retail price of $49.95.

Borland International
4113 Scotts Valley Dr.
Scotts Valley, CA 95066
(408) 438-8400

CIRCLE **423** ON READER SERVICE CARD

Database Software for Macintosh

Desktop Software has announced *1st Base*, a relational database package for the Macintosh. It features multiple file handling, nested sorts, stored report programs, and mouse control. It runs on the 128K and 512K Macintosh and sells for $195.

Desktop Software
CN 5287
Princeton, NJ 08540
(609) 924-7111
CIRCLE **425** ON READER SERVICE CARD

Stoneware has introduced *DB Master Macintosh*, a database management system that features multiple disk files, text fields up to 3000 characters long, varied font styles and sizes, and mouse control. It retails for $195.

Stoneware
50 Belvedere St.
San Rafael, CA 94901
(415) 454-6500
CIRCLE **426** ON READER SERVICE CARD

Forethought has introduced *Factfinder*, a free-form filing system for the Macintosh. Information is stored in a factsheet window and several factsheets can be grouped together. *Factfinder* sells for $150.

Forethought
1973 Landings Dr.
Mountain View, CA 94043
(800) MAC-WARE
(415) 961-4720
CIRCLE **427** ON READER SERVICE CARD

Computer Software Design has unveiled *MacLion*, a relational database management system for the Macintosh. It features a report writer, screen generator, and mouse control and sells for $379.

Computer Software Design
1911 Wright Circle
Anaheim, CA 92806
(714) 634-9012
CIRCLE **428** ON READER SERVICE CARD

Eqtron has released *MacBase*, a relational database program for the Macintosh. *MacBase* is not report oriented; instead, it places all calculated and reporting fields on the screen exactly as they appear on a print out. It retails for $195.

Eqtron
330 Bay St. Suite 1115
Toronto, ON
Canada M5H 2S8
(416) 361-5002
CIRCLE **429** ON READER SERVICE CARD

Quadram Software

Quadram, long a manufacturer of hardware, has entered the software arena with Quadsoft, a library of 12 business programs for the IBM PC and compatibles.

The programs are *The Executive Organizer; The Deadline Manager; The*

Investment Strategist; The Tax Strategist; The Data Base Manager; Select Write: Word Processing 101; Freestyle, The Outline-Based Word Processor; The Guide to Writing a Business Plan; Bi-lingual Spanish/English Word Processor; 4-1-1 The Retrieval System, Key II Data Management for Lotus 1-2-3, and *The Starter Kit for Symphony*. Retail prices range from $50 to $395.

Quadram
4355 International Blvd.
Norcross, GA 30093
(404) 564-1975
CIRCLE **433** ON READER SERVICE CARD

Accounting Software for Macintosh

Great Plains Software has introduced the *Harddisk Accounting Series*, a six-module package for the Macintosh. The modules are General Ledger with Financial Reporting and Budgeting, Accounts Receivable, Accounts Payable, Payroll, Inventory Management with Point of Sale Invoicing, and Job Cost with Estimating, Costing, and Pre-Billing.

The modules sell for $695 each and run on the 128K or 512K Macintosh with a Tecmar hard disk.

Great Plains Software
1701 SW 38th St.
Fargo, ND 58103
(701) 281-0550
CIRCLE **430** ON READER SERVICE CARD

Micromax Systems has released Gallery, a series of business accounting software for the Macintosh. The initial module, *Finance*, consists of accounts receivable, accounts payable, general ledger, cash disbursement journal with optional payroll, and balance sheet/profit and loss statements. Finance retails for $795.

Additional Gallery modules under development include *Payroll/Personnel, Job Costing/Project Control*, and *Fixed Assets and Corporate Taxes.*

Micromax Systems
6868 Nancy Ridge Dr.
San Diego, CA 92121
(619) 457-3131
CIRCLE **431** ON READER SERVICE CARD

Peachtree Software has introduced *Back to Basics Accounting System* for the Macintosh. The entry-level package consists of three modules, General Ledger, Accounts Payable, and Accounts Receivable. It features full mouse control, pull down menus, windows, icons, and on-line help.

The *Back to Basics Accounting System* runs on the 128K or 512K Macintosh. The retail price for the package has not been set.

Peachtree Software
3445 Peachtree Rd. NE
Atlanta, GA 30326
(800) 554-8900
(404) 239-3000
CIRCLE **432** ON READER SERVICE CARD

Basic Programming from MECA

Micro Education Corporation of America has introduced *Basic Building Blocks*, a Basic programming tutorial and program debugger for the IBM PC family. It is already available for Atari and Apple II computers and retails for $79.95.

MECA
285 Riverside Ave.
Westport, CT 06880
(203) 222-1000
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NOTEBOOK COMPUTING

Password Protect fix, gate crashers, and an amazing new entry from Japan

John J. Anderson

Wait until you hear about the notebook computer we have for you this month. It has popped from out of the woodwork, and if given half a chance, may just clobber all the known quantities. It may just be innovative enough to change the topography of the portable industry. Then again, it may be too good to succeed. But before we get to the main event, I have a few boo-boos to redress.

Dumbware

Why is it, you may ask, that the print-out of the December Password Protection program managed to pack not one but two typos in it? Well (gulp), I'm not sure. One thing I am sure about, though, is that lots of you caught it. I am also reasonably satisfied that most of you were able to get the program running without waiting to see the fixes in this issue. To those of you who haven't, and to all, I apologize. Wasn't it a valuable learning experience, though? The fixes appear in Figure 1.

Other than that all is well. Those of you who downloaded the program from Compuserve got it right the first time.

I wish I could close the case right there, but that's the least of it. Mark Cridland stopped over at Creative Computing Online with the following message:

"John, I'm writing in regard to the Password Protection program, December issue, p. 190. I've crashed your locks! Nyah-ha! Of course, I had to . . . it seems that when inserting my own password into the program, I had forgotten to change the dummy string in line 30. I hadn't saved my ADRS.DO or DESK.DO (miscellany) files in a good long time, and was not willing to lose them without a fight. While the program was running at the TRY AGAIN prompt, I punched the dedicated PRINT key, unshifted. Two seconds later I hit the dedicated BREAK key and that's all she wrote . . . "? I/O ERROR in 40" results. Typing MENU RETURN (*not* F8) from there puts you back into Mama's arms.

Much to my horror, I was able to reproduce Mark's results in my own experiments. Curses! Back to the drawing board. Ah well . . .

Ampere APL Portable

I got a call from friend and fellow Model 100er Bob Covington the other day, and first heard about the Ampere portable. The more he told me, the lower my jaw dropped, and as result I decided to mount my own investigation of this magic machine. My thanks to you, Bob, for putting me onto it.

One look at it will intrigue you; it looks as if it had been carved out of the cross section of a small Fiberglas airfoil (see photos). The case was designed by Kumeo Tamura, who among other distinguished credits, designed the original Datsun 280Z coupe.

The flip-top reveals a full-size 80 x 25 character LCD, which like the Datavue 25, and unlike the Data General/One, is extremely easy to read, even in less than optimal lighting conditions. It sports 64K RAM expandable internally to 256K, a 70-key full-stroke keyboard, built-in parallel and serial ports, 300 baud autodial modem, clock/calendar, and three cartridge slots. An accessory bus slot allows the addition of floppy disk, hard disk, and memory expansion to 512K. In addition, a built-in 300K microcassette unit can be used to store data or to record and playback audio. It includes a built-in microphone and speaker, and can be used as a telephone answering machine, as well as a telephone call recorder.

But the real news is the fact that in-

Figure 1.

```
40 A=INKEY$ should be A$=INKEY$
70 PRINT:PRINT:NEGATIVE... should be PRINT: PRINT"NEGATIVE...
```

side its 128K of system ROM is a language that can make real use of the 8 MHz 32-bit 68000 CPU that forms the Ampere's advanced brain—APL. APL is a high level programming language originally designed for IBM mainframes back in the late 1960's. In his book *Computer Lib, Creative Computing* contributing editor Ted Nelson said the following of the APL language:

"Some people call it a 'scientific' language. Some people call it a 'mathematical' language. Some people are most struck by its use for interactive systems, so to them it's an 'interactive' language. But most of us just think of it as 'the language with all the funny symbols' . . . Enthusiasts see it as a language of inconceivable power, with extraordinary uses. Cynics remark that it has all kinds of extraordinary powers for inconceivable uses—that is, a weird elegance, much of which has no use at all, and some of which gets in the way.

"This is probably wrong. APL is a terrific and beautiful triumph of the mind, and a very useful programming language. It is not for everybody, but neither is chess. It is for bright children, mathematicians, and companies that want to build interactive systems . . . APL is a language of arrays, with a fascinating notation . . . Let's just say the language works on *things* modified successively by *operators*. Their order and result is based upon those fiendish chicken scratches, Iverson notation."

APL has some rather bizarre symbols, many of which are missing in common ASCII notation, and they largely replace the English-like command sets we have all grown to know and love in Basic, Pascal, and Logo. Nelson calls APL "stark and clever," but goes on to note that the language is undeniably dense, and hard to debug. In Iverson notation the same symbol can mean two different things, dependent upon its context.

The Ampere runs Big.APL, a subset of APL 68000, which itself is an adaption of IBM APL.SV, under an operating system dubbed Big.DOS. This implementation has been enhanced to include a component file system, alpha report formatting, text handling, and full-screen editing capabilities. It supports foreground and background multitasking and windowing.

An integrated software package will be packed into ROM as a standard feature of the Ampere. It will include a word processor, spreadsheet, telecommunications package, and database program. The three cartridge slots can be used to stow up to 1 Meg of ROM or 64K of CMOS RAM each. Ampere states that a $500 1 Meg 3.5" microfloppy drive will be offered to complement the Ampere portable.

When the unit was first announced, its startling price of $1500 was based on a 16-line display. With the jump to a full-screen display, the retail price will probably move to the vicinity of $2000. This still seems extremely reasonable for a 6.5 lb. machine measuring 12" x 12" x 3" and packing the punch of a 68000-based APL system. We hope to provide a full review of this remarkable machine as soon as it becomes available to us.

Ampere Inc., Asahi Building, 5-20, Nishi-Shinjuku, 7-Chome, Shinjuku-Ku, Tokyo, Japan, 03-365-0825 ■

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APPLE CART

A MacCart: Getting rid of Puzzle, multiple files in MacWrite, FatMac RAMdisk, slide shows, and external video

John J. Anderson

I have so much MacStuff to tell you about this time around that my colleague Owen Linzmayer isn't going to get IIc a word in edgewise. That will come as good news to Mac owners this month and as bad news to owners of the II series. Next month, however, Owen will devote the entire column to the Apple II series—that is the deal we've struck for equal time. C'mon, Apple owners: write and/or telecommunicate to us the need for separate columns for the Macintosh and Apple II series. No promises, but we'd like to see what the response is.

Modified Desk Accessories

I'm sure that by now you Mac owners have had your fill of most of the desk accessories to be pulled down from the Apple logo on the menu bar. Certainly the Scrapbook is the most important of these; we'd all be sunk without it. When I can remind myself of how handy it is, I sometimes pull out the Note Pad to jot down a phone number or an address.

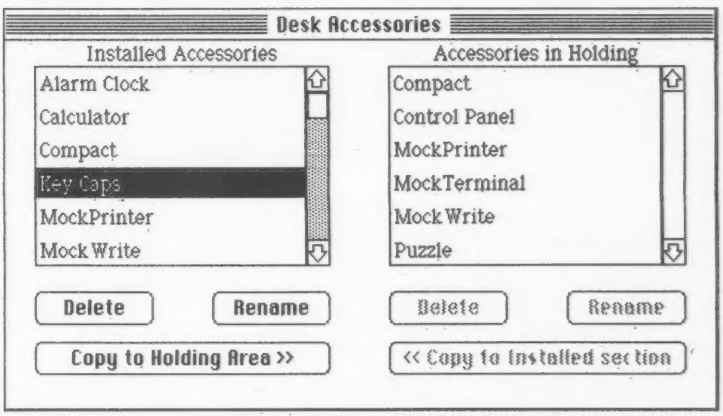
But how often do you access the other entries on this menu? Surely the Control Panel is very important at least once in the life of every Mac owner. But I haven't used it for months. I always thought the calculator was a great idea, because it seemed ludicrous to keep a $7 machine nestled near my $5000 wonder. But in practice, I never seem to use it. Perhaps it is because I lack a numeric keypad, but I doubt that I would use the calculator even if I had one. Besides, my credit card calculator takes up much less space and costs much less than the keypad itself.

As far as the Alarm Clock, Key Caps, and Puzzle go, forget about it. Once in a blue moon I pull down the clock, to check it against my watch. I am pleased with the accuracy of this function. But I do not make use of it. If it could be used to power up to an application or *MacWrite* document, that might make a difference. The only time I ever used Key Caps was to find out where on the keyboard the bullet symbol was hiding out (Option-8, to save you a trip to Key Caps). I called up the Puzzle once during a demo of the Mac to my Mom and Dad. They said they thought it was cute.

In the backs of our minds, we have always hoped that someday we could replace a few of the sillier accessories with something really useful—something with which we could customize our system disks. Well that day has arrived. The product is called *Desk Accessory Mover*, and four brand new accessories are already available for it. Using the program, you can load these new modules into the Apple logo menu while deleting any of the standard desk accessories that you find superfluous. You can save unused accessories in a storage area and bring them out as needed, or you can customize system folders to sport only the accessories you choose. The program, by Donald Brown, takes full advantage of the Macintosh Toolbox, and requires no documentation to manipulate successfully.

I'll describe the custom accessories that are now available, in order of their importance to me. First is *MockWrite* a text editor desk accessory, which allows modification of text files on the fly. This has proved an invaluable asset to me as a means to create and edit text files from within a terminal program, as opposed to having to exit the application, load *MacWrite*, prepare a file, exit *MacWrite*, and then reload the terminal application. It also allows a form of multiple file windows from within *MacWrite* itself. Right now I can keep a running "Firms Mentioned" file on *MockWrite*, while the Apple Cart itself resides in *MacWrite*. *MockWrite* looks just like a mini-*MacWrite*, and the editing functions work identically, though as a subset.

Next there is *MockPrint*, which can print a file from within any other application. It works as a subset of the Toolbox print dialog box, and you can choose the desired format and print quality of the output.



If you own a Skinny Mac and a Tecmar hard disk you'll want to install *Compact*, a desk accessory submitted by unnamed MAUGer 72436,3374, which clears as much memory as possible for those times when you try to eject a floppy and the Mac spits back at you with a "not enough memory" message. Using *Compact*, you can eject the Tecmar boot disk right off the bat and get its image off the desktop. This is a real boon to Skinny Mac/Tecmar owners who lack an external drive.

Finally there is *MockTerm*, which is a bare-bones but fully-functional terminal program which can be pulled down as a desk accessory. I use both *MacTep* and *MacTerminal* to communicate through the Mac, depending upon the tasks I intend to complete and have no real desire to utilize yet a third program. But I tried it, and it works, and it seems to work well.

The idea assuredly is that the creation of new desk accessories will be an ongoing process. Using the *Desk Accessory Mover*, you will always be able to keep your favorites on tap. Goodbye Puzzle, hello full-featured text editor accessory. Goodbye Key Caps, hello printer utility. I have already thought of a couple of other accessories I'd like to see. How about a pull-down reset accessory, which would eject all disks, then reboot from a cold start? That would save some wear and tear on all our tired power switches. What about a Panic Button accessory to protect the Mac from unauthorized access while remaining in the middle of any application? It might turn off the screen and keyboard upon pull-down, then prompt for a password when the mouse is quadruple-clicked. Then after the boss has left, you can return to right where you left off in *Lode Runner*.

Let us know what ideas you have for desk accessories, and we'll make the best of them known to all—online and in print.

How can you get hold of *Desk Accessory Mover* and the new accessories for it? Well you're in for a bit of a shock—it is unprotected, and CE Software, distributor of the package, actually encourages you not only to copy it, but to give it to all the Mac owners you know. CE calls the approach the "MacHonor System." We have called it freeware in previous columns. The idea is that you can check out the actual program for yourself in your own time. If you don't care for it, you just erase it, and that is that. If you decide to use it, however, you are encouraged to send $15 to CE Software, to receive a "user's license and registration." Their motto is, "They may laugh at us, but we trust you!"

Does it really work? Well, CE, as well as other freeware distributors, claim it does. I would love to believe that it does, but tend to be skeptical. I did manage to get *MockWrite* to crash mysteriously a couple of times, and generally believe that freeware is somewhat buggier than the real thing. But *Desk Accessory Mover* is worth at least $15, and my check is in the mail.

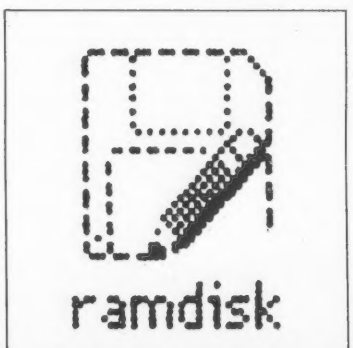
If you are a member of MAUG, you can download *Desk Accessory Mover* and all four accessories outlined above right after you finish reading this column. They reside on XA4.

With a mere 1 Meg of RAM, we could load the entire system folder, MacWrite, MacPaint, MacTerm, and Lotus Jazz into a RAMdisk and still have room for the overhead needed to run them all.

Mac RAMDisk

If you are lucky enough to be the owner of a Fat Mac, another desk accessory that may already be on your list is a RAMdisk. If it isn't, it should be, and I'll tell you why. One of the most serious problems of the Mac is its slowness and for most things, the Fat Mac is as slow as the Skinny Mac. But what if you could cache some of that 512K away, and get the Fat Mac to treat that chunk of RAM as a phantom floppy? That is exactly the task of a RAMDisk. When this "phloppy" is read from, files load as fast as they can be poured across the partition slammed into RAM—that is to say, really, really fast. How fast? Imagine moving between *MacPaint* and *MacWrite* in less than four seconds.

The real trick is to copy the system folder, or at least a relevant portion of the system folder, to the RAMdisk. Reading system files wastes the most time in moving to and from the Finder and actual applications. Add the most needed applications to the RAMdisk, and your Macintosh will retract its landing gear for the first time. A demo of Fat Mac with RAMdisk will give you a strong idea of how the Mac user interface really should feel—and what the Xerox Star and Lisa were designed to do—namely, *fly*.



Ramdisk icon, designed by R. W. Zehr.

Wondering where to get a RAMdisk for your Fat Mac? Well, at the risk of sounding like a broken record, you can download it from Compuserve if you are a member of MAUG. More likely by now the question may be, why aren't you a member of MAUG?

The RAMdisk offered on XA4 of MAUG is offered by Paul Emerson (72355,171) with thanks to John Peterson and Mark Harley. It partitions a little over 300K into RAMdisk space. I have managed to bomb this program a couple of times, but it does work most of the time, and if booting *MacWrite* in two shakes of a lamb's tail is the type of thing that excites you, you should download it. You'll need to install it using another program, available in XA5, called RMOVER (short for Resource Mover). We'll have to wait a little longer to see a pull-down RAMdisk desk accessory.

Bear in mind that in the process of grafting on a RAMdisk, you will reduce directly addressable RAM back into the regions of the Skinny Mac. This fact underscores the shortsightedness of designing the current Macintosh to accept a maximum of 512K. (Perhaps this is a good time to remind ourselves that 68000 processor, brain of our little beige friend, can address only a measly 16 Meg). With a mere 1 Meg of RAM, we could load the entire system folder, *MacWrite, MacPaint, MacTerm,* and Lotus *Jazz* into a RAMdisk and still have room for the overhead needed to run them all. But (tsk, tsk) we'll just have to wait for the next generation Mac to do that. Or will we, third party manufacturers? Are you listening?

The major "gotcha" in running a RAMdisk: creating a datafile, saving it to "phloppy" instead of floppy, then exiting the application or accidentally "ejecting" the RAMdisk. In the latter case, Emerson shows you a way to "reinsert" the RAMdisk and recover the files. But it is always best to be careful to save datafiles to actual disks.

Emerson is another one of that dedicated breed of programmers who offers the fruits of his labors *gratis* to all, to use, share, and improve upon (see Tele-

Creative Computing

Please indicate which of the following microcomputers you currently own and/or plan to buy in the next 12 months.

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Apple	A	L
Atari	B	M
Commodore/PET	C	N
Digital Equipment/DEC	D	O
Heath/Zenith	E	P
IBM	F	Q
Radio Shack/Tandy TRS-80	G	R
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Timex Sinclair	I	T
Other (specify)	J	U
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3 For what, if any, business application(s) do you use the microcomputer you currently own?_____

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Atari	B	M
Commodore/PET	C	N
Digital Equipment/DEC	D	O
Heath/Zenith	E	P
IBM	F	Q
Radio Shack/Tandy TRS-80	G	R
Texas Instruments	H	S
Timex Sinclair	I	T
Other (specify)	J	U
None	K	V

3 For what, if any, business application(s) do you use the microcomputer you currently own?_____

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communications Talk for more on this score). He and those like him embody the principles of unprotected code, shared insight, and the freeware ethic that has characterized many Macintosh developers and developments. More power to all of you.

It is also likely that retail RAMdisk packages will appear alongside other Fat Mac software in the very near future.

Slide Show Magician

We received a demo disk in the mail the other day that stopped my workday cold (not to say that's too tough to do). The disk consisted of "projector" and "show" icons developed on a package called the *Slide Show Magician* from Magnum Software. It allows you to make "slide show" presentations to run on the Macintosh.

Using input from *MacPaint, MacWrite, Multiplan*, or any compatible binary source, you can compile graphics displays, and use any of a half dozen special effects to move between them. Wipes, dissolves, special effects, and animated effects are all available from point and click development "maps"—which, according to the manufacturer, allow you to compose shows quite easily You can interrupt and branch on any frame, using buttons right from the Toolbox, without any need for programming skills. You can superimpose text, either all at once or word by word at a selectable rate—even insert subliminal messages (all's fair in love and slide presentations). Projectors and shows can be copied to disk at will, and will auto run from their Finder icons.

We have not yet seen the actual production package, and so will withhold comment on its ease of use for a follow-up in an upcoming column. But it can be said based on the demo only that *Slide Show Magician* is a very powerful package and one that capitalizes effectively on the power of the Macintosh as a tool for graphic presentations. $59.95.

Slide Show Magician is a very powerful package and one that capitalizes effectively on the power of the Macintosh as a tool for graphic representations.

CineMac

The emergence of a powerful software presentation tool for the Mac naturally segues back to a problem I raised in my initial review of the Macintosh, way back in July 1984: the sore lack of an external video output jack. Question: How many people can you huddle around a 9" screen and expect them to comprehend what flashes across it? Answer: No more than three.

In that original review I put forth the fond hope that a third party company would remedy the problem, and I'm happy to report that MicroGraphic Images Corp. has done just that. They sell a $195 kit that puts a video plug on the back of the Mac. All hardware is internal, and no black boxes are necessary. All you need is a video monitor with a horizontal scan rate of 22 Khz or higher. Compatible monitors with screens from 12" to 19" and even compatible video projection systems are available through Cinemac.

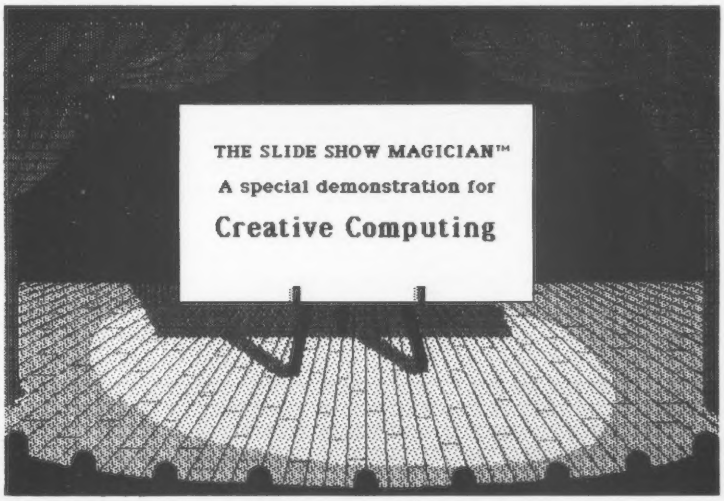
Micro-Imager

Add another video digitizer to the Macfray: the Micro-Imager from Servidyne Systems. The hardware/software package allows you to capture an image from an NTSC video source such as your home video camera, and transfer that image into the Mac. You can edit the image using *MacPaint* or by internal edit commands, and then store, recall, and print it whenever you wish.

Digitized image resolution is 511 x 322 pixels—virtually the entire Macintosh screen minus the menu bar. There are two capture modes: two-shade (best for high contrast line drawings and diagrams) and six-shade (best for pictures and portraits). Contrast and brightness adjustments are easily made via front panel controls. A video output is supplied for an external monitor, allowing one to view the digitized image in real time prior to capture. Connection is through the Mac modem port.

The price of the Micro-Imager was not finalized at press time; but Servidyne estimates a list price of $350.

That's about the size of it; I'm talked out. Next month, Mr. Linzmayer brings you further tales of the II—then I'll be back with more on the Mac. Catch you then. ■



Firms Mentioned in This Column

CE Software
801 73rd St, Dept. M
Des Moines, IA 50312
(515) 224-1995

Magnum Software
21115 Devonshire St. Ste. 337
Chatsworth, CA 91311
(818) 700-0510

MicroGraphic Images Corp.
19612 Kingsbury St.
Chatsworth, CA 91311
(818) 368-3482

Servidyne Systems Inc.
1735 DeFoor Pl.
P.O. Box 93846
Atlanta, GA 30377
(404) 352-2050

IBM IMAGES

Adventures in RAMland

Will Fastie

When the original PC was introduced, it seemed to be offered with many memory options appropriate for the times; 16K in a base machine, 64K in a "standard" version, and expansion to 256K via 64K add-in boards sounded quite reasonable.

Wrong. I think the add-in memory board business may have been the most explosive opportunity for the after market, and third party vendors lost no time filling IBM's vacuum. And just to make it interesting, they also threw in serial ports, clocks, software, and other goodies that gave them an advantage over the competing IBM parts. AST Research didn't get where it is today by building ho-hum products.

Okay. So you figure IBM watches closely and won't make the same mistake again.

Wrong. Well, to be fair, IBM announced PCjr with at least 64K and more commonly 128K, a whopping *eight* times more than the original PC had and at a considerably lower price. Trouble was, by that time most PCs were in the more than 256K category, and many software products were requiring that much memory. Worse, IBM may have underestimated the number of users taking advantage of electronic disk software on the PC. Suddenly, 128K didn't sound quite so terrific.

Now 128K is actually a fair amount of memory. What makes it marginal is that software developers today do not have the resources (time or money) to build products that fit in smaller memory sizes. They tend to trade your machine's memory for their time; the result is a product out their door and into your hands faster than would otherwise be possible.

The PCjr was rather hobbled by its memory limitation. Many important software programs were not available on the machine, and those that were ran a little slower. Moreover, the add-in vendors were confronted with a new set of problems that made building expansion memory more difficult than it had been for the PC. The less severe of these included the housings for the sidecars (the plastic box that matches the finish of your PCjr) and the strange bolts used to fasten sidecars to the PCjr and one another. The more difficult problems were availability of power to drive the sidecars and the peculiar arrangement of the bottom 128K of PCjr memory.

The less severe problems may have kept quite a few vendors out of the PCjr expansion business. The real problem is that PCjr sidecars require greater manufacturing skills and precision than add-in boards for the PC. Tecmar, living in tool-and-die-rich Cleveland, was able to ramp up faster than anyone else and is now in the driver's seat. I know of only two other vendors of PCjr add-on products: IBM and Microsoft.

Software developers today do not have the resources (time or money) to build products that fit in smaller memory sizes.

The power problem was solved by IBM and Tecmar in different ways. IBM now offers a sidecar which does nothing more than deliver 20 watts to up to three other outboard sidecars. Tecmar chose to power each add-on, and although this tends to create a little extra wire clutter, it is also more cost-effective.

The memory problem has also been addressed differently by each vendor. IBM offers only one product: 128K in a sidecar. IBM says that up to three such sidecars can be added, for a total of 512K. One IBM expansion unit can be added to PCjr without the need for extra power, and this seems to imply you could add a first 128K, then the power unit, and then three more 128K sidecars for a total memory configuration of 640K. Experiments have verified this and also demonstrated that a PCjr can get very, very wide: five sidecars add 5 5/8". IBM's memory costs $325, and the power module costs $150.

Tecmar has a more rational approach. The base module, called jrCaptain, includes 128K, a parallel port, and the ubiquitous clock/calendar and is priced at $395.

Included is Tecmar's Treasure Chest of Software, 24 programs that perform a variety of tasks. For more memory expansion, the jrCadet sidecar can be used to expand memory all the way to 640K. Yet another Tecmar product, jrWave, can be used instead of jrCaptain; it does not have the parallel port or the calendar but can expand memory up to 640K all by itself (and with the help of 256K bit chips).

Catch 128 . . .

So you thought things were sounding good. The power problem is solved. The memory problem is solved. What's left?

A biggie. PCjr includes one very peculiar feature: it allows the video buffer (that is, the memory used to hold the data to be displayed on the screen) to be assigned to different places in memory. On the PC, this memory was an integral part of the display adapter and was assigned to locations outside the 640K space used for program execution. On PCjr, it is in normal RAM and can be anywhere.

Ah, but not quite. The original PCjr was only 128K and the video buffer was expected to reside at the top of RAM. To make matters worse, PCjr was designed in a way that requires the video memory to reside within the first 128K of memory. This restriction creates a problem when more memory is added: the video buffer is in the middle of memory, with

chunks of program memory below and above. Programs written for the PC or PCjr require their program memory to be "contiguous," that is, all in one piece.

Both IBM and Tecmar provide software to solve the problem. The solution is to move the video buffer lower in memory and load programs for execution just after it. That strategy leaves a memory organization as shown in Figure 1 with DOS at the bottom, the video buffer next, and free memory last.

The two software solutions are different, and here, for a change, IBM shines. Their program allows the creation of varying sizes of video buffers as well as electronic disks. So does Tecmar's. Where IBM departs is in the sizing of the video buffer. Both IBM and Tecmar can create a buffer of 16 or 32K. IBM takes the additional, creative step of allowing a 96K buffer, which can be used for multiple pages of data. PCjr can switch between these pages rapidly, providing animation or just fast text display swapping. A more significant advantage is an improvement in the performance of programs.

Because the lower 128K of PCjr memory includes the video buffer, memory cycles must be shared between the CPU and the video display logic. The 8088 CPU does not get as many cycles as it does in a standard PC, and the performance of programs is thus less by about 40%. Add-on memory, however, does not suffer this fate and can deliver every cycle to the CPU. If programs could be loaded entirely in outboard memory, performance similar to that of the PC could be achieved.

Defining a video buffer of 96K pushes the combined size of DOS and the buffer to exactly 128K (the video buffer has to start on a 32K boundary) and allows all loaded programs to reside in expansion memory and, therefore, run faster. It is a nice touch, IBM, and one we would have ordinarily expected from outside sources.

And now the rub. IBM software to perform these tricks is available only in the box with IBM 128K sidecars. Ditto for Tecmar. Well, I guess I'm going to have to write a program to perform the IBM-style memory trick and publish it here. Tecmar is probably alert to this, and I would expect them to make their software do the same.

Summary: IBM 128K expansion is less expensive for the first 128K and comes with the clever software. Tecmar is more expensive, more cost-effective, less expensive at higher memory sizes, and comes with adequate software and the Treasure Chest. You pick.

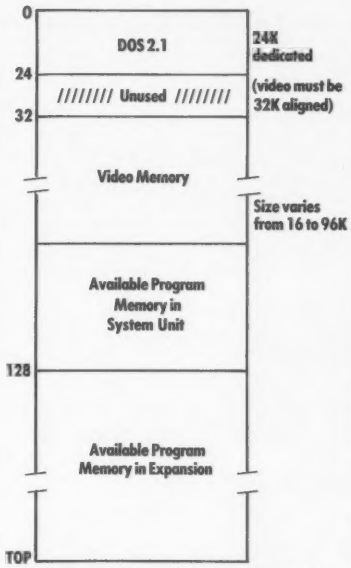


Figure 1. PCjr Memory Organization after moving video buffer.

Electronic Disk

I'm probably like a lot of folks: I use some of my 576K of main memory as an electronic disk drive. On my home system, all the software I use runs in 256K, leaving 320Kb for disk. Having this third hand is, well, handy. Using it effectively takes some thought.

I use it differently for different things. When I use the word processor, RAM disk holds the WP program, and data files are written directly to a floppy. When I'm programming in C, the RAM disk has the source and object files, and the compiler is executed from floppy. For Turbo Pascal, everything is on RAM drive. Other examples follow the same pattern.

Managing the electronic disk is not something that can be taken casually, especially if it contains data. I stopped using vendor software for RAM disks and started using JetDrive, from Tall Tree Systems, because the product includes a utility, called JET, that makes managing electronic disk painless. The most current version includes features and options that make it the electronic disk software of choice, even if it doesn't come for free with your expansion memory board.

The electronic disk software is a little different from most of the "freebies." It includes special support for Tall Tree's memory board product, JRAM-2, and the combination of board and software provides memory expansion for the PC well beyond the 1Mb limit. A more important difference is its trap for the Ctrl-Alt-Del "warm start" sequence.

Before the XT came along, most RAM disk software required that the system board switches be set to mark the boundary between program memory and disk memory. Because the PC used the switches to size memory, RAM disk could be protected from a warm start and thus could be preserved across a reboot. The XT, however, has no such switches, and reboots thus clobber RAM disks. Tall Tree Systems has provided their own trap for the reboot key sequence and JetDrive is thus able to preserve electronic disks regardless of switch settings. This facility also lets you have all of memory if desired, or configure different RAM disks to suit different tasks.

JET

The JET program is worth the entire purchase price of the *JetDrive* package. Period. It is also hard to describe briefly because it is so rich in function and capability. It has so many features that I will not be able to describe them all here.

First and foremost, JET is a replacement for the DOS command COPY. Its most important feature is speed: it runs at least three times faster than COPY. It is even faster than DISKCOPY, and has the added advantage of being able to copy all the files from a disk of one format to a disk of another, something DISKCOPY cannot do.

JET is an update manager. Unless overridden, it copies only files whose date and time are more recent than the file on the target disk, and files that do not exist on the target disk.

The other major feature of Jet is backup: it can split the files it copies onto multiple disks and can recover files in the same way. Again, its virtue over the DOS BACKUP command is one of speed.

Understanding how to use JET effectively is important. I use it for three things: copying disks, setting up RAM disks, and updating data disks. For copying, JET is used just like the DOS COPY command.

RAM disk is a little different. Once a RAM disk has been created, the programs or data files you wish to use must be copied into it. I am somewhat or-

ganized; my disks are organized functionally, usually one function per disk. For example, I have only one programming language on my Turbo Pascal disk. Setting up the RAM disk is just a matter of copying files, but JET makes the process so much faster that it is the preferred method. However, I have automated the process a little further. Because I always want to use RAM disk, I like to get it automatically set to go when I turn on my system. My AUTOEXEC.BAT file (Listing 1) thus looks to see if there is a disk in drive B: using the program FDEXIST (see Listing 2) and if so, invokes JET to copy the files from B: to the RAM disk. If the file named FILELIST is on B:, a special option of JET is used to copy only those files specifically listed in FILELIST.

If I have performed one task with the system and then wish to do something else, I use the batch file SETUP-C.BAT (Listing 3) to erase C: and perform a load similar to the one in AUTOEXEC.BAT. This can be done at any time, regardless of the state of the RAM disk.

If the RAM disk is being used to hold data files, it is a wise practice periodically to copy any files that have changed back to the master disk. I usually put the master disk into drive B: and issue the command

JET C: B:

which copies those files which have changed, or any new files, back to disk. The only drawback to this scheme is deleted files; those files remain on disk because once they are deleted on the RAM disk, JET does not see them. This method is safe because it forces you to delete files directly from the floppy. JET is probably the most important utility I own. It is a very technical piece of software with many options and flexibility but some complexity. I think it is one of the better values in software and well worth the price. ■

Listing 1. AUTOEXEC.BAT for automatic RAM disk loading.

```
echo off
astclock
cls
ver
timemark
echo
path c:\;a:\
prompt [$p]$g
c:
if exist LOADED goto :end
  fdexist b:
  if errorlevel 99 goto :end
  rem if here, attempt to setup C:
    b:
    if exist scbegin.msg type scbegin.msg
    if exist filelist jet b: c: b:filelist/f
    if not exist filelist jet b: c:
    c:
    copy a:loaded c:
:end
echo ------------------------------------------------------------------------
echo Condition of Electronic Disk:
chkdsk
echo ------------------------------------------------------------------------
set
echo on
```

Listing 2. FDEXIST.ASM

```
; FDEXIST -- Program to determine if drive has media inserted
;
; Source:       FDEXIST.ASM     (Executable:  FDEXIST.COM)
; Author:       Will Fastie  04 Nov 84
; Last Edit:    11/04/84 17:30
; Requires:     DOS 2.0 or above
;
; Invocation:   FDEXIST [d:]
;               if d: is specified, that drive; otherwise b:
;
; --- Macros and Declarations

DOS     macro   fcn_code
        mov     ah,fcn_code
        int     21H
        endm

OKAY    equ     0       ; errorlevels
FAILED  equ     99H     ;

; --- Setup for .COM program

CSEG    segment para public 'CODE'
        assume cs:CSEG, ds:CSEG

        org     5CH
DRIVE   db      ?       ; this is where the drive designator is

        org     100H

START:  mov     al,DRIVE        ; get the drive designator
        cmp     al,0            ; is it the default?
        jnz     FDSET           ; ...no, drive was specified
        mov     DRIVE,2         ; ...yes, change to b:
FDSET:  dec     DRIVE           ; convert drive number
        mov     dx,0            ; read a sector
        call    READ1
        jnc     FOUND           ; error?
        mov     al,FAILED       ; ...yes, no media
        jmp     DONE
FOUND:  mov     al,OKAY         ; ...no, media was found
DONE:   DOS     4CH             ; terminate

; --- Read a sector

READ1   proc    near            ; DX has sector to read
        mov     al,DRIVE        ; Do a disk read
        mov     cx,1            ; ...just one sector
        mov     bx,offset TAIL  ; ...use a dummy buffer behind us
        int     25H             ; BIOS via DOS
        pop     bx              ; get rid of flags
        ret                     ; error code in AL
READ1   endp

TAIL:   nop                     ; Here's where we'll let the read happen

CSEG    ends
        end     start
```

Listing 3. SETUP - C.BAT

```
echo off
del c:*.* <a:yes.ans
b:
if exist scbegin.msg type scbegin.msg
if exist filelist jet b: c: b:filelist/f
if not exist filelist jet b: c:
if exist scend.msg type scend.msg
c:
echo on
```

YES.ANS is a file that contains the character Y followed by a carriage return and is used to automatically answer the DEL command's query Are you sure?

TANDY GRAM

C—a useful alternative to Basic

Jake Commander

For the last few months, I've been slaving away on the keyboard of my Model III. The intended fruit of this self-enforced hard labor is the deliverance of myself from the Basic language. Not that I have anything against Basic: for the last 14 years it has served me like a faithful slave, obeying my every wish, command—and mistake. Whenever it has been too slow, I have resorted to the good old, low level assembly language with which I also feel most comfortable.

No, don't knock it. Basic hasn't become the celebrity it has for nothing. It is easy to learn, looks fairly readable (especially with a liberal sprinkling of remarks), and does the job. So why do I want to deliver myself from it?

Well maybe I'm overstating the situation a little. What I want to do is provide myself with an alternative to the choice of either slow but easily developed programs in Basic, or fast but harder to write programs in machine code. When I first started programming professionally in 1968, I learned a language called Cleo which was similar in many ways to Cobol. This language was compiled into assembly language in a two-step process. The first step was to translate the Cleo source code into what was called Intercode. Intercode was a language in its own right and was much lower level than Cleo. The second step was to compile the Intercode into assembly language source code. So, starting with a high level language, you ended up with an assembly language program.

The Intercode was the fascinating part. It was still a language in its own right but you could really get a feel for how its structure lent it to being compiled into pure assembly language. It was a simple task to learn the ins and outs of this language, and I soon abandoned dear Cleo in favor of my more powerful ally.

Being a machine code programmer at heart, I enjoyed looking through a listing to see how the compiler had turned each line of code into assembler source lines. I had discovered the power of a low level language. Unhappily, shortly after these discoveries, the company I worked for bought a Honeywell 6000 so I said goodbye to Intercode and hello to Basic.

Since that time, 95% of my programming efforts have been divided between machine code and Basic: two extremes—black and white—night and day. That is why I have been so hard at my keyboard; I have rediscovered another extremely powerful ally, the C programming language. Don't buy a Basic compiler, buy a C compiler. Basic was always meant to be interpreted anyway. Come to grips with a language that is as easy to learn as Basic and promotes a more disciplined approach to programming.

With any luck, I can persuade you that there are alternatives to the either/or approach of Basic versus machine code.

Be Not Afraid of C

Those of you who are already into C probably knew all along what was coming. But for those of you who didn't, read on. With any luck, I can persuade you that there are alternatives to the either/or approach of Basic versus machine code. Deliverance from (or at least an alternative to) Basic can be yours if you keep an open mind.

For a start, C is not one of those weird languages that are so far removed from English that comprehension is possible only for a robot. (I'll barefacedly accuse APL and Lisp of being in that category.) If the Basic statement XX = 99 feels familiar enough, then the C statement XX = 99, shouldn't represent too large a leap of the intuitive processes. The best, though, is that XX = 99 in C is compiled into something like:

```
LD  HL,99
LD  (XX),HL
```

—pure assembly language source code, but still close enough to the original C line to retain some meaning even to someone not familiar with assembler.

That is how it is with the C language. Everything is compiled into a set of assembly language statements which perform the equivalent task. You end up with a bona fide machine code program which the computer pieces together instead of the set of *actions* which the computer would piece together under an interpreter.

In an attempt to convince Basic programmers that they would have an easy time learning C, I'll give a quick rundown of some of the features of the language. For those of you who want the whole works, there is a book called (appropriately enough) *The C Programming Language* by Brian Kernighan and Denis Ritchie, the designer of C. It is published by Prentice-Hall and is considered the bible of the language. I highly recommend it along with another book from Byte Books (more for beginners) called *The C Primer* by Les Hancock and Morris Krieger.

Assignment and Arithmetic Operators

If I asked you what the assignment operator was in Basic, you might have to think a bit before you answered "the equal sign." That is because you don't think of the term "assignment operator" when you write XX = 99. You're more likely to think (or at least I do) "XX equals 99" than "99 is assigned to XX."

```
Basic:  IF (XX = 99) AND (YY < > 11) GOSUB 100
  C:    if( (XX = = 99) & (YY != 11) ) doit ( );
```

Figure 1.

```
while ( Z < = 10 ) { print( X ); X = X + 1; }
```

Figure 2.

The point I'm making here is, don't be put off by menacing terms like assignment operators; you use operators such as these all the time in Basic without having to know their generic names.

In fact there are many things you come to take for granted about the syntax of Basic. When you are learning or reading about another language, terse descriptive terms look more menacing than the simple objects they describe.

So, in plain terms, the assignment operator in Basic and C is the same—the equal sign. The conditional operators are just about the same too; expressions like XX < = 99 are the same in C as in Basic. One difference here is that the Basic < > for "not equal to" is ! = in C (the exclamation point reads as "not"). In C, XX = !TRUE reads "XX equals not true." Sure, sure, I could have said XX = FALSE but I'm illustrating a point, OK?

Another difference in this area is that you don't use a single equal sign in a test for equality. In C, you use a double equal sign as in:

```
if ( XX = = 1 )
```

(read it as "if XX is-equal-to 1"). This shows another thing you take for granted in Basic. That equal sign has a different meaning in XX = 99 and IF XX = 99 but you don't think twice about it. In C, they are kept separate. I'll confess that I still forget and occasionally use a single equal sign because of habits learned from Basic.

Arithmetic operators are the same as Basic, the usual signs for plus, minus, times, and divide with a percent sign for the modulus operator. There is no exponentiation operator in C—that is considered a high level function, and C is a low level language.

The Basic Boolean operators (those menacing terms again) are AND, OR, and XOR. In C, they are all single characters—an ampersand, a vertical bar, and a caret. Armed with what we know so far, let's look at the Basic line and equivalent C statement in Figure 1.

The two lines are similar enough to keep me smiling, but here are the differences for anybody with a frown. A C statement always ends in a semicolon. There are no line numbers in C so you name the routines instead; in this example I've assumed the function "doit" does the same as the subroutine at line 100 in Basic. (Subroutines in C are referred to as "functions.")

The AND is replaced by &. The = becomes = = and the < > becomes ! =. Apart from the parentheses to enclose the "if" expression, that's it. The statement written in C will produce a Z80 routine on a Model 4 or a 6809 version on a Color Computer which will perform exactly the same task in machine code on either machine.

Useful Functions

The FOR:NEXT loop in Basic has always been one of its most useful features. In C, it is even better. Imagine if in Basic you could say:

```
FOR X=1 TO Y=10  STEP Z=Z+2
```

What you would be saying here is "start the loop with X equal to 1; end the loop when Y is 10; and add 2 to Z every time around the loop. This is exactly what you can do in C and it is an order of magnitude more powerful than the Basic version. The statement would look like:

```
for ( X=1 ; Y= =10 ; Z=Z+2 ).
```

Whereas a more typical Basic FOR:NEXT loop counting 1 to 10 would be:

```
for ( X=1 ; X= =10 ; X=X+1 ).
```

This is still close enough to Basic to make the learning experience easy. That's my point. If you know Basic, you are already halfway to C. Moreover, if you know Pascal, you are 80% on the way. Like Pascal, C contains a "while" statement (which is even incorporated into some dialects of Basic these days). For those unfamiliar with the "while" statement, Figure 2 offers an example.

This assumes a function called print which presumably not only prints the value of X, but changes the value of Z so the loop can terminate at some point. This example is not all that different from a FOR:NEXT loop, except that there is no initialization or step size expression in the parentheses.

One aspect of the language that has been jealously guarded by its writers since its inception has been its portability.

You can break out of any loop in C (including a "while," a "do while," or a "for") by using a break statement. A favorite statement of mine in C is the switch statement. This is a little like the Basic ON...GOTO construction. Imagine you have a variable CH which contains a number between 2 and 4. In Basic you would say:

```
ON CH-1 GOTO 100,200,300
```

What happens if CH is 1? Or 5? or 100? C is ready with the switch statement like this:

```
switch ( CH )
{
case 2:
{one ( ); break; }
case 3:
{two ( ); break; }
case 4:
{three( ); break; }
default:
gotcha( );
}
```

This statement simply executes whichever case is appropriate according to the switch variable (in this instance, CH). Each case is terminated by a break to drop out of the switch statement once the action is complete. Not only that but now we would catch an errant number 1 or 5 or 100 with that default case. Very easy and very watertight.

That is as far as I aim to go in tempting you with a description of its syntax. I've made a noise about some of the similarities to Basic in order to convince Basic aficionados that programming in C isn't the gigantic mental leap that you might think. There are, of course, some things that are different. But not that many. A look at the C statement words alone shows how much you know already: if, else, while, do, for, switch, case, default, break, continue, return, and goto.

One aspect of the language that has been jealously guarded by its writers since its inception has been its portability. A properly written C program is almost certain to run on a different machine (mainframe, mini, or micro) without a single alteration. A library of C programs is, therefore, more valuable

than a Basic library due to myriad versions of polluted Basic floating about.

I hope I have convinced somebody. I convinced myself a while ago, and I am enthusiastic enough about the language to pass some of it on. I'm writing a compiler using C—a task which would be an absolute bear in assembly language but is nearly a joy in C.

Available Compilers

There aren't many C compilers around for the TRS-80, but choices do exist. If I can get my hands on any, I'll review them here. For the Color Computer there is the Radio Shack OS-9 version of C at $100 which is a fully implemented compiler. (It is possible to buy cheaper compilers which implement only the most commonly used parts of the language.) Dugger's Growing Systems offers C for OS-9, Flex, and Color Computer DOS at prices between $50 and $75.

For the Model 4, there is PRO-LC from Misosys at $124.95 including an editor and macro assembler. Manx Software Systems also produces C for the Models II, III, 4, 12 and 16 with prices ranging from $75 to $2000.

Good grief. I didn't leave any room to say thanks for the letters. Some of them I'll answer in the column if I can stop myself from getting on such a roll in the future. Also, I meant to review ADOS from Spectrosystems and Spectrum DOS from Spectrum Projects. Next month, guys. Honest. That's if I don't get into Fortran. ■

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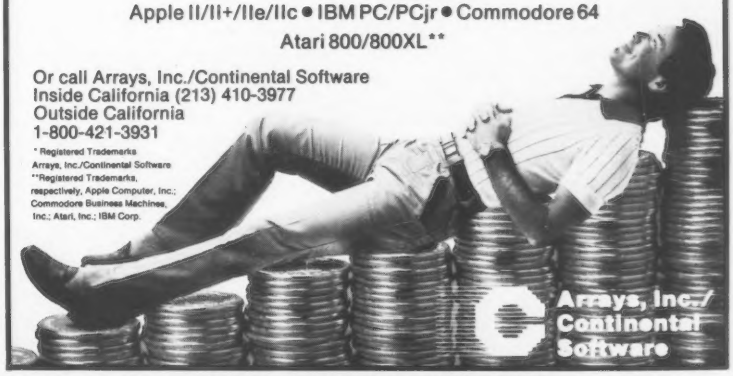

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COMMODORE'S PORT

Getting acquainted with DOS

Robert Alonso and John J. Anderson

You may have spent some time exploring your C64, familiarizing yourself with some of the things it can do. But have you ever explored your disk drive? I've done some snooping around in mine and learned quite a bit about directories, sequential files, and the error channel. In the next couple of columns, we will take a look around the 1541 drive, and see how it allocates, then uses, disk space.

DOS

This month's application program is designed to count the free blocks on any disk. Listings 1 and 2 both produce the same object code. If you like to see results, type in Listing 2 and run it. It will POKE a machine language program into memory starting at 49152. When you see the READY prompt on the screen type SYS 49152, and the program will count the free blocks directly from the Block Allocation Map (BAM) on the disk.

If, however, you want to learn a little more machine language or understand how the BAM is organized on a disk, then read on.

The BAM is a mystery to most 1541 users because most of us never have to bother with it. When you load a directory, the 1541 DOS automatically counts the free blocks and tells you the results at the end of the directory listing. However, it can be useful to know how the BAM works and to have a utility program that will give you just the blocks free count. You may, for example, need a disk on which to save a very long program. Obviously, it would not be wise to load the directory to find out if the program fit on a given disk. With the programs presented here, this problem is eliminated. Just keep the machine code at 49152 where it will not be disturbed and whenever you need it, just SYS to it. It will not corrupt your Basic program at all.

One way to access the BAM is to open the directory like a file. This is done in Listing 1 in lines 265 through 315. The same technique can be used to open any file from machine language. Once the directory is opened, you define the file number, in this instance file number 2, as the input channel. This means that every time the GETIN routine of the kernal is called a byte will be input from file number 2 and placed in the accumulator. The following Basic code does the same thing:

```
10 OPEN 2,8,2,"$"
20 GET#2,A$
```

The GETIN routine is first called in lines 400 and 405 where it is used to dispose of the first two bytes of the directory file. These two bytes are an ASCII letter A, which indicates that the disk has been formatted on a 1541 or 4040 disk drive, and an unused byte.

The next 140 bytes, all part of the BAM, are arranged in a peculiar, but ingenious, way. Each track takes up four bytes of the BAM. The first byte always holds the total bytes free for that particular track, and the other three bytes are coded so that each individual bit stands for a sector.

If the bit is set (binary 1), then the track is free; if it is clear (binary 0), it is allocated. It is very easy to count the number of free blocks by adding together all the first bytes. This is exactly what Listing 1 does.

Take a look at lines 415 through 435. The first byte is added to a temporary memory location BLOCK, and the subsequent three bytes are discarded. The process continues in a loop until track 18 is reached. Because track 18 contains the BAM and the directory, all the free blocks on track 18 are off limits and should not be counted. Listing 1 takes care of this in lines 450 through 460.

The loop then continues until it reaches the end of track 35. The total is then printed on the screen, and the BLOCKS AVAILABLE message printed after it. Lines 545 through 595 print out a decimal number and a message string.

Lines 615 through 630 of Listing 1 take care of the housekeeping chores. The input and output channels are restored to their default conditions. File number 2 is closed. And program control is returned to the calling routine. If you SYS to the routine from Basic, control is returned to you on the screen, and the READY prompt is printed.

That's all for now. I'll see you next month with some more all machine language routines.—*RA*

Amiga Will Run Turbo Pascal

Borland International, developer of the very popular language Turbo Pascal, has announced that Turbo Pascal has been chosen by Commodore as the exclusive Pascal language for the Amiga computer. Turbo Pascal has already sold over 200,000 copies in its IBM, Apple, TI, HP, DEC, Wang and NCR implementations.

Borland president Philippe Kahn told *Creative Computing* he expects that "The Amiga, with its sophisticated user interface, will provide strong competition for Apple Computer's Macintosh and Apple II microcomputers. We are committed to deliver Turbo Pascal, fully implemented, on Commodore's long-awaited Amiga."

David Morse, head of the Amiga project, stated, "We evaluated Turbo Pascal closely, and found that it complements in software some of the best features the Amiga can provide in hardware—including speed and functionality."

As an added bonus, Amiga users who purchase Turbo Pascal will have the power to transfer programs developed on the Amiga to an IBM PC, XT, AT, or PCjr, with the Turbo cross-assembler.

Industry analysts predict that the new Amiga, Commodore's first true high-performance computer, will position Commodore as a serious contender in the small business market, where such heavyweights as IBM and Hewlett-Packard are already firmly entrenched. —*JJA* ■

Listing 1. Pal Source File.

```
100 SYS 700:.OPT OO:*=$C000
105 ;   ********************************
110 ;   *                              *
115 ;   *     CREATIVE COMPUTING       *
120 ;   *   ML BLOCKS FREE COUNT       *
125 ;   *       ROBERT ALONSO          *
130 ;   *                              *
135 ;   ********************************
140 ;
145 ; EQUATES
150 ;
155 ; BASIC ROM
160 ;
165 STROUT = $AB1E
170 LINPRT = $BDCD
175 ;
180 ; OPERATING SYSTEM
185 ;
190 CLEAR  = $E544
195 ;
200 ; KERNAL JUMP TABLE
205 ;
210 SETLFS = $FFBA
215 SETNAM = $FFBD
220 OPEN   = $FFC0
225 CLOSE  = $FFC3
230 CHKIN  = $FFC6
235 CLRCHN = $FFCC
240 CHROUT = $FFD2
245 GETIN  = $FFE4
250 ;
255 ; OPEN CHANNEL NUMBER 2, DIRECTORY
260 ;
265 LDA #$02       ;LOGICAL FILE #2
270 LDX #$08       ;DEVICE #8
275 LDY #$02       ;COMMAND #2
280 JSR SETLFS     ;SET LOGICAL FILE.
285 ;
290 LDA #$01       ;LENGTH OF NAME
295 LDX #<NAME     ;LOW BYTE
300 LDY #>NAME     ;HIGH BYTE
305 JSR SETNAM     ;NAME THE FILE.
310 ;
315 JSR OPEN       ;OPEN 2,8,2,"$"
320 ;
325 ; DEFINE AN INPUT CHANNEL
330 ;
335 JSR CLEAR      ;CLEAR SCREEN
340 LDX #$02       ;CHANNEL NUMBER 2
345 JSR CHKIN      ;DEFINE AS INPUT.
350 ;
355 ; MAIN PROGRAM
360 ;
365 ; COUNT THE BAM ON 18,0
370 ;
375 LDA #$00       ;INITIALIZE
380 STA BLOCK+1    ;LOCATIONS USED
385 LDA #$02       ;IN BAM COUNT
390 STA COUNTER    ;ROUTINE.
395 ;
400 JSR GETIN      ;GET RID OF TWO
405 JSR GETIN      ;BYTES.
410 ;
415 JSR GETIN      ;GET FIRST NUMBER
420 STA BLOCK      ;STORE IT.
425 MORE JSR GETIN ;GET RID OF
430 JSR GETIN      ;THREE BYTES
435 JSR GETIN      ;IN BETWEEN.
440 ;
445 JSR GETIN      ;GET ANOTHER NUMBER
450 LDX COUNTER    ;CHECK FOR TRACK 18
455 CPX #$12       ;AND SKIP IT. NEVER
460 BEQ SKIP       ;COUNT THESE.
465 ;
470 CLC            ;CLEAR THE CARRY
475 ADC BLOCK      ;ADD THE NUMBER TO
480 STA BLOCK      ;LOW BYTE.
485 LDA BLOCK+1    ;IF LOW BYTE >255
490 ADC #$00       ;THEN INCREASE
495 STA BLOCK+1    ;HIGH BYTE.
500 ;
505 LDX COUNTER    ;CHECK COUNTER
510 SKIP INX       ;FOR TRACK 36. IF <
515 STX COUNTER    ;36 CONTINUE, OTHER-
520 CPX #$24       ;WISE END.
525 BNE MORE       ;IF NOT END,GET MORE
530 ;
535 ; BLOCKS AVAILABLE MESSAGE
540 ;
545 LDA #$8D       ;SHIFTED RETURN
550 JSR CHROUT     ;PRINT IT TWICE AS
555 JSR CHROUT     ;LINEFEEDS.
560 LDX BLOCK      ;GET LOW BYTE
565 LDA BLOCK+1    ;AND HIGH AND
570 JSR LINPRT     ;OUTPUT DECIMAL
575 LDA #$20       ;PRINT A SPACE
580 JSR CHROUT
585 LDA #<MESSAGE  ;LOW BYTE ADDRESS
590 LDY #>MESSAGE  ;HIGH BYTE
595 JSR STROUT     ;PRINT STRING.
600 ;
605 ; ENDING STEPS
610 ;
615 JSR CLRCHN     ;CLEAR CHANNELS
620 LDA #$02       ;CHANNEL #2
625 JSR CLOSE      ;CLOSE IT.
630 RTS            ;RETURN
635 ;
640 COUNTER .BYTE $00
645 BLOCK   .BYTE $00,$00
650 NAME    .ASC "$"
655 MESSAGE .ASC "BLOCKS AVAILABLE."
660 .BYTE $00
```

Listing 2. Basic Loader.

```
100 REM ********************************
105 REM *                              *
110 REM * CREATIVE COMPUTING LOADER    *
115 REM *   ML BLOCKS FREE COUNT       *
120 REM *       ROBERT ALONSO          *
125 REM *                              *
130 REM ********************************
135 REM
140 PRINT CHR$(147):POKE53281,0
145 PRINT "THIS PROGRAM POKES A"
150 PRINT "ML PROGRAM FILE"
155 PRINT "INTO MEMORY."
160 FOR X=49152 TO 49307:READ A: B=B+A
165 NEXT: IF B<>20724 THEN 215
170 RESTORE
175 FOR X=49152 TO 49307:READ A
180 POKE X,A: NEXT: PRINT
185 PRINT "THE PROGRAM CAN BE CALLED"
190 PRINT "BY TYPING SYS 49152 AND"
195 PRINT "PRESSING RETURN. IT WILL"
200 PRINT "COUNT THE NUMBER OF FREE"
205 PRINT "BLOCKS ON YOUR DISKETTE."
210 PRINT "THE DRIVE MUST BE ON.": END
215 PRINT CHR$(28)
220 PRINT "THERE IS AN ERROR IN THE"
225 PRINT "DATA STATEMENTS. CHECK"
230 PRINT "THEM FOR ACCURACY.": END
235 DATA 169,2,162,8,160,2,32,186,255
240 DATA 169,1,162,137,160,192,32,189
245 DATA 255,32,192,255,32,68,229,162
250 DATA 2,32,198,255,169,0,141,136
255 DATA 192,169,2,141,134,192,32,228
260 DATA 255,32,228,255,32,228,255,141
265 DATA 135,192,32,228,255,32,228,255
270 DATA 32,228,255,32,228,255,174,134
275 DATA 192,224,18,240,18,24,109,135
280 DATA 192,141,135,192,173,136,192
285 DATA 105,0,141,136,192,174,134,192
290 DATA 232,142,134,192,224,36,208,211
295 DATA 169,141,32,210,255,32,210,255
300 DATA 174,135,192,173,136,192,32,205
305 DATA 189,169,32,32,210,255,169,138
310 DATA 160,192,32,30,171,32,204,255
315 DATA 169,2,32,195,255,96,0,0
320 DATA 0,36,66,76,79,67,75,83
325 DATA 32,65,86,65,73,76,65,66
330 DATA 76,69,46,0
```

OUTPOST: ATARI

The state of Atari and
a musical instrument to make

John J. Anderson and Robert Swirsky

Well, hello again, Atarians. It may not look like it at first glance, but this is a very special column, and it is a special pleasure to man the Outpost once again this month. For this is the column that might never have been.

At the mere whisper on the *Creative Computing* SIG on Compuserve that the column might be dropped, we received more than 200 pleas to save the Outpost—an impressive response, indeed. It assured the continuing existence of the column—for at least the time being.

Here is a smidge of hard evidence that we listen to our readers—and that our online forum truly works both ways. Thanks to our SIG members not only for their continuing support, but for their solidarity on the issue.

Out of Intensive Care

Resulting from aggressive price cuts and a new multimillion dollar media campaign, the Atari 800XL was sold out through the Christmas season. At $119, the 800XL, which was the only micro Atari had left, proved that the home consumer is still interested in low-end computing. The Atari 1050 disk drive was discounted to under $200, with the goal of pricing an entire system, including 1027 letter quality printer and word processing cartridge, at under $600.

But Still Critical

Realistically, however, how long can that boost last? Atari has needed to take a giant step into the next generation of hardware—and at a news conference in late November, finally announced its plans. At CES they will debut three new 8-bit machines, compatible with the current 800XL, and including a new equivalent to the 800XL. This new entry will look almost exactly like the older machine, but will incorporate a number of design improvements. Another 8-bit machine will be a transportable, and at least one will ship with 128K standard.

Atari will also introduce a 300/1200 baud modem, which connects without need for 850 interface, and a low-cost full-size color printer.

All 16- and 32- bit machines will utilize VLSI custom chips alongside their main processors and run a proprietary DOS. Most significantly, they will run GEM, Graphics Environment Manager, from Digital Research.

According to Tramiel brother Sam, at least one of a new line of 16-bit Atari machines will also surface at Winter CES, and the first of a line of 32-bit "super-machines" will be previewed at the Hannover Fair in Germany this April. Sam Tramiel told *Antic* that the new 32-bit machine would be built around a National Semiconductor 32032 processor, and would be in fact a "VAX in a box."

All the 16- and 32-bit machines will utilize VLSI custom chips alongside their main processors and run a proprietary DOS. Most significantly, they will run GEM, Graphics Environment Manager, from Digital Research. This OS shell features pull-down menus, sizable windows, icons, and pointer input device support for mice, et al. Sound familiar? Jack Tramiel has publicly stated that it is his intention to produce a machine capable of outdoing the Macintosh in graphics power and ease of use, and to do it in color for less than the price of a standard Mac.

He has had to attempt this without the benefit of the state-of-the-art Amiga chipset, which had been promised to Atari, and subsequently "unpromised," right about the time he came on board. Atari continues to fight for rights to the chipset in litigation. Loss of the Amiga chipset was a serious blow to Atari, but apparently has not stopped Jack from pursuit of his goal.

The Prognosis

Can Atari battle its way back into the consumer fray? Absolutely yes, if what they have to offer is better than what the competition has to offer, costs less, and can be manufactured reliably in quantity. Jack must count on each of these points to succeed.

Atari will never gain a reputation as a serious maker of business machines, and in the past the business market has had a make or break effect on more than one microcomputer. If, in fact, a proprietary operating system implies that MS-DOS compatibility is out, Atari is taking a big gamble indeed.

In the meantime, it is good merely to hear from the small group of powerful men that now command Atari Corporation—to hear them talk about 1985 in terms of billion dollar sales, and so forth. It shows that the confidence of a single man can still influence the industry. And from that perspective, we can only hope for the best.

Magical Music

It has been ages since we have run an Atari hardware application—and here's one that is so offbeat it just had to get its moment of glory. Thanks to Robert Swirsky for sending this one in.

When Lee DeForest perfected the first electronic oscillator in 1915, he had no idea that he would provoke a revolution in musical production. It was his oscillator—a device that could produce audio

tones—that was incorporated in the early electronic musical instruments. Of course, in modern electronic instruments, the tones are produced by a microprocessor that essentially serves as a clock to pulse a speaker at varying intervals and amplitudes.

At the beginning of the twentieth century, however, digital computers were certainly not available. Analog methods were used to produce electronic music. One common device was a "slider" control arranged to vary the pitch of the oscillator; another was an analog keyboard.

Computerized Theremin

Not satisfied with these methods of controlling an audio oscillator, the Russian scientist Leon Theremin devised his own instrument which he called, without any modesty whatsoever, the Theremin.

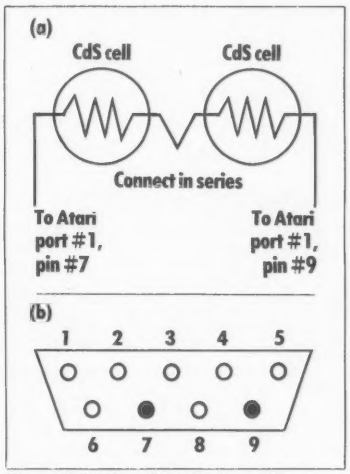

Figure 1. (a) How the CdS photocells are connected. (b) Pinout of the Atari player port. Use a type 'DE9' plug.

The original Theremin consisted of an oscillator connected to a radio antenna. By varying the distance of your hands from the antenna, you could control the pitch of the oscillator. Moving your hands above the antenna would raise the pitch and bringing them closer would lower it.

The Theremin is all but dead today. There was a time, however, when the devices were frequently used: during the era of the early science fiction movies. The Theremin was the device used to create the "tuning the radio" noises that the mad scientist inevitably used to communicate with other worlds. If you have ever seen an old SF movie, you have probably heard one.

It is a shame to see a musical instrument die. Therefore, I had decided to resurrect the instrument in a modern form more appropriate for 'todays' era: the computerized Theremin. This turned out to be much simpler than I had imagined, allowing for one major change in the original design. In place of the antenna I substituted a cadmium sulfide (CdS) photoelectric cell. The CdS cell is a device that changes its electrical resistance according to the amount of light falling on it. By using your hands to create shadows on the photocell, the pitch of the Theremin can be changed.

The Details

The interface circuit is very simple. I used two CdS cells (available from electronic parts suppliers) connected in series. Using dual cells provides a greater range of resistances and more control of the instrument. The cells are mounted on a board an inch apart and connected to the Atari Player 1 controller jack with a nine pin D connector. (See Figure 1).

Software for the Theremin couldn't be simpler. It consists of two program statements:

```
10 SOUND 0,PADDLE(0),10,10
20 GOTO 10
```

Of course, the software could be changed to provide a number of special effects, but these would make the instrument perform differently, so it could not be classified as a Theremin. I'm sure Leon Theremin wouldn't want to see his concept distorted and his name besmirched.

Incidentally, there are other uses for a photocell controller. With the controller, your Atari has the ability to detect light, and can be used, for instance, in security applications. Perhaps it would make an interesting game controller: there are no moving parts to wear out. While this controller acts as PADDLE(0) from Basic, other CdS cells (up to seven more) can be hooked up and accessed with Atari Basic commands PADDLE(1) through PADDLE(8).

The computerized Theremin is probably one of the easiest musical devices to simulate on a computer. It is also simple to play—just move your hands to allow varying amounts of light to reach the photocell. I used mine as one of the voices in a composition "Fugue for Three Ataris" which was performed before an enthusiastic audience at Hofstra University. ■

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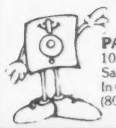

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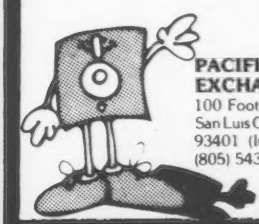

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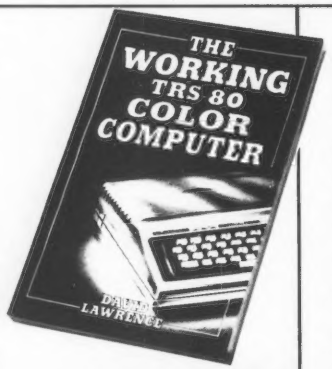

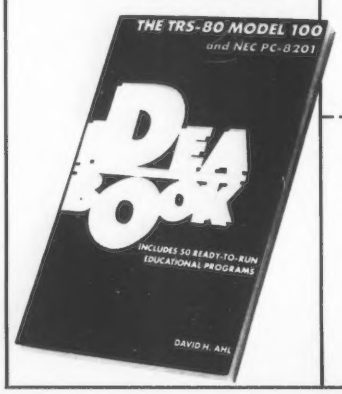

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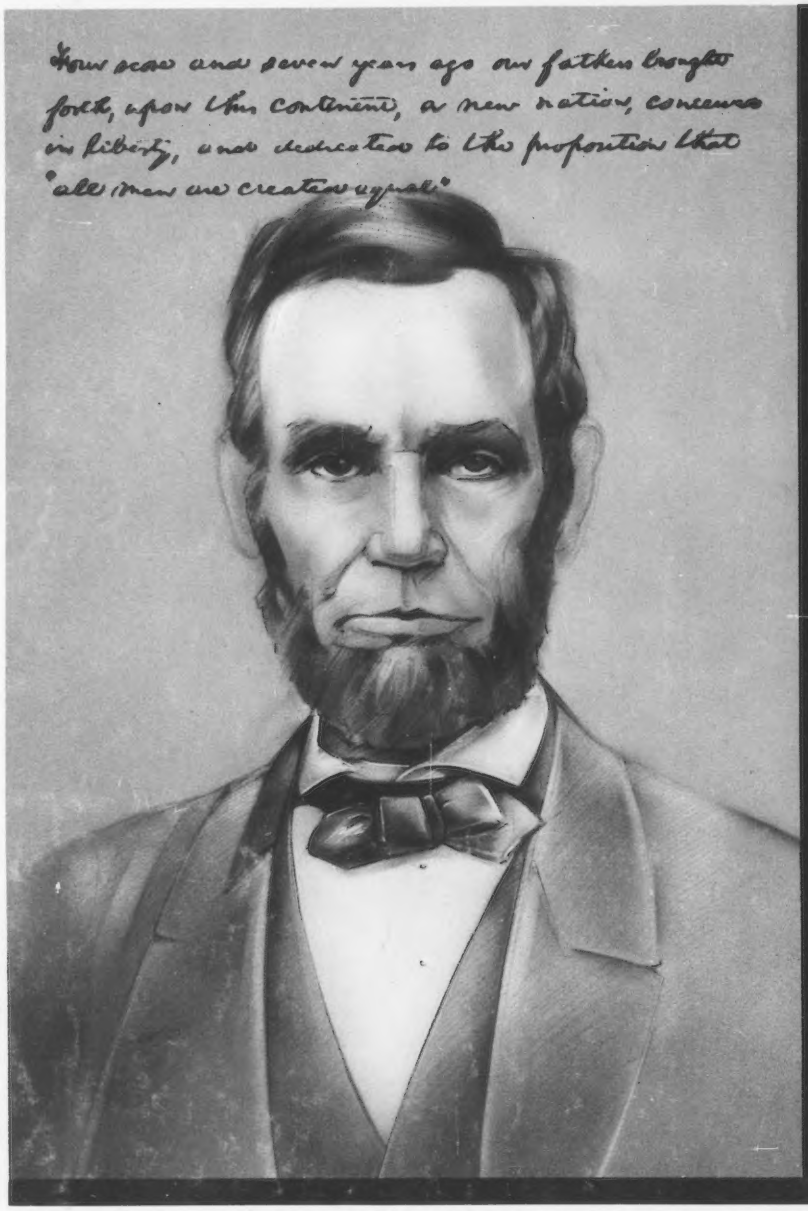
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